Management Information Systems for Microfinance Institutions

A Handbook

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Management Information Systems for Microfinance Institutions: *A Handbook*

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The handbook's structure

Developing an MIS is a complex undertaking involving a broad range of issues. This complexity contributes both to the length of this document and to the order in which the material is presented.

Chapter 1 provides a basic introduction to information issues. Chapter 2 describes the accounting system for a microfinance institution. Since most information tracked in an MIS is financial, accounting procedures—particularly the chart of accounts—are fundamental to a well-functioning MIS. This material comes early in the handbook because much of the material to follow depends on a clear understanding of accounting issues.

Chapter 3 gives guidance on designing useful reports for decisionmakers, and an accompanying pamphlet presents sample formats for the most important reports for monitoring performance. Reports contain information presented according to certain established definitions. Chapter 4 therefore provides a detailed overview of indicators and their definitions.

The last chapter describes the steps in developing and implementing an MIS, a process in which the reader applies the material presented in earlier chapters.

There are also several useful annexes. Annex 1, written with managers in mind, introduces technical information on MIS software and technology. Annex 2 describes the accounts in a sample chart of accounts, emphasizing those specific to microfinance institutions. Annex 3 describes useful publications for institutions developing an MIS. And annex 4 provides information on internationally available MIS software packages.

Foreword

Most of the world's poor do not have access to formal banking services, because reaching tiny customers with conventional banking techniques has seemed too risky or too costly. But the past two decades have seen the development of new microfinance technologies that have lowered the risk and the cost of lending to poor entrepreneurs and households.

There are now thousands of new microfinance institutions around the world. Many are small, reaching only a few hundred clients. But a growing number have been able to extend their services to thousands or even millions of poor customers. And a few have been able to put their operations on a completely profitable basis; these microfinance institutions can escape the limits imposed by scarce donor or government funding and finance massive expansion from commercial sources.

Most microfinance institutions, however, are not-for-profit organizations that entered the finance business for social reasons. Understandably, they seldom have sophisticated business skills and systems when they start, and their information systems tend to be rudimentary. But as microfinance institutions grow to several thousand customers and beyond, they typically feel a need to improve their management information system (MIS). Managers of growing institutions gradually lose their ability to maintain personal contact with what is happening at the field level, and realize that they cannot adequately manage their portfolio and financial operations without better information.

Thus we find that many microfinance institutions are strongly motivated to improve their MIS. Unfortunately, this is seldom easy to do. Although now available from a variety of sources, off-the-shelf software for microfinance usually offers no quick fix, in part because local technical support is not widely available. Most microfinance institutions find that they must custom design a large part of their MIS. Almost all those that have done this report that getting an MIS that truly meets their needs costs them much more in time, money, and management attention than they had anticipated.

We hope that this handbook will be useful to institutions seeking to build an effective MIS for their microfinance operations. The handbook is not simple, because the task is not simple. The volume's size and level of detail may intimidate many readers. Some clarification may be useful in this respect.

The illustrative set of reports laid out in the handbook has been designed to be adequate for a fairly large microfinance institution serving thousands of customers and with plans for aggressive growth. Neither microfinance institutions nor those who fund them should view this set of reports as a universal "best practice" template—there is no one-size-fits-all MIS for microfinance. Instead, the elements of information described in the handbook should be thought of as a checklist. In reviewing them, each microfinance institution should decide which elements make sense for its situation.

Institutions large enough to be licensed by financial authorities may need systems that go well beyond what is illustrated here, in order to meet country-specific reporting requirements. Smaller institutions or those with a more modest growth trajectory may opt for more simplicity: their circumstances may not justify the cost in time and money of mounting a system as sophisticated as that described here. But even these smaller institutions may find the handbook's approach to information systems useful, as well as some of the model reports.

Whatever a microfinance institution's size, intelligent decisions about MIS design need to be based on a systematic survey of the information needs of all the institution's stakeholders—from customers to directors. And whatever an institution's size, managers will probably find that they need to invest more time and money than they had expected in order to get an MIS that satisfies their needs.

Since this handbook breaks new ground, we are sure that experience will reveal areas for improvement in future revisions. Thus we are anxious to hear from managers of microfinance institutions who have put it to the test of practical use. These are busy people who may find it difficult to free up time for correspondence about their experience with the handbook. Still, we know that they share our belief in the immense human worth of microfinance, and hope that they will be motivated to contribute to improvement of this tool in subsequent editions.

Please send comments or suggestions by email to Jennifer Isern (jisern@worldbank.org) or Richard Rosenberg (rrosenberg@worldbank.org), or contact them through the offices of the Consultative Group to Assist the Poorest (telephone: +1-202-473-9594; fax: +1-202-522-3744; mailing address: Room Q 4-023, World Bank, 1818 H Street NW, Washington, D.C. 20433, USA).

This handbook is the first in CGAP's technical papers series. Future topics in this series will include audit guidelines, business planning and financial projections, and experience with microfinance "apex" facilities for wholesale funding of microfinance institutions.

Ira Lieberman
January 1998
Chief Executive Officer
Consultative Group to Assist the Poorest

Preface

A management information system (MIS) is one of the most critical but least understood elements of a successful microfinance institution. Despite the increasing interest in this area, literature on the subject is still limited. This handbook therefore seeks to:

- Underline the importance of an MIS to a well-functioning microfinance institution
- Provide both managers and information systems staff with basic guidance in selecting, developing, or refining an MIS
- Contribute to the development of commonly accepted definitions and terms in microfinance
- Provide guidance on important ratios and useful reports for monitoring institutional performance
- Fill a gap in the microfinance literature, while complementing earlier work on financial ratios, portfolio management, and MIS guidelines.

Developing an MIS is a complex topic that can be dealt with on a wide range of levels. While the handbook presents much general information, it primarily addresses the management information system needs of medium-size to large, growth-oriented microfinance institutions. It is directed to these institutions' managers and their staff.

Even more specifically, however, the handbook addresses the two groups most concerned with an MIS—information users and systems developers. A fundamental problem in developing effective management information systems has been poor communication between these two groups. The handbook tries to improve this communication by assisting information users in defining their information needs and by "educating" each group about the world of the other. It introduces key concepts and terms, describes managers' needs, and explains limitations of computerized information systems. As a result of this approach, parts of the handbook are written with managers in mind, parts with systems developers in mind, and parts with both audiences in mind.

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The primary authors of the handbook are Chuck Waterfield and Nick Ramsing. The handbook was edited by Alison Strong and laid out by Glenn McGrath, and its production was coordinated by Paul Holtz—all with Communications Development Incorporated. Jennifer Isern and Richard Rosenberg of CGAP coordinated the development of the manual.

Management and staff of several microfinance institutions contributed to the manual, including PRODEM (Bolivia), FIE (Bolivia), FINCA (Uganda), BRAC (Bangladesh), and Buro Tangail (Bangladesh). Special thanks are due to Women's World Banking for volunteering the use of material developed during an earlier MIS study, to ACCION for sharing the CAMEL Review System, and to Robert Peck Christen, Tony Sheldon, Peter Marion, and Bill Tucker for advice and the use of materials they had previously developed.

In addition, CGAP appreciates the helpful comments provided by reviewers, including the following people: S. N. Kairy, BRAC; Fermin Vivanco and Cesar Lopez, ACCION; Elizabeth Rhyne, U.S. Agency for International Development; Mark Flaming and Miguel Taborga, Inter-American Development Bank; Claus-Peter Zeitinger and Per Noll, IPC Consult; Graham Perrett; Tony Sheldon, Women's World Banking; Bob Christen; Lawrence Yanovitch, Lee Arnette, and Peter Marion, FINCA; Hugh Scott, Department for International Development, United Kingdom; M. Mosharrof Hossain, Buro Tangail; Damian von Stauffenberg and Shari Berenbach, Private Sector Initiatives Foundation; Jean-Hubert Gallouet, Horus; Claire Wavamunno, Bank of Uganda; Eduardo Bazoberry, PRODEM; Enrique Soruco, FIE; Iftekhar Hossain, Acnabin & Co.; Jacqueline Bass; and Pierre Laroque, Desjardins International.

CHAPTER 1

Introduction

This chapter lays the groundwork for the rest of the handbook. It discusses the importance of information in managing a microfinance institution. It explains what information is, and why it is not all alike. It describes the role of a management information system in providing information. And it explains why information management is so problematic.

1.1 Why is information so important?

> *"Management information systems? Our computer people handle that."*
>
> *"I get all these numbers every month, but I have no idea what I'm supposed to do with them."*
>
> *"If only I'd known that six months ago."*
>
> *"You mean I could have that information every week? Why, that would transform the way our entire organization works!"*

The better an institution's information, the better it can manage its resources

All organizations have an information system of some kind. Many might see a minimal system as sufficient—say, a manual accounting system that produces reports three months late. Why undertake the massive effort and cost to improve an information system? Because having good information is essential for an institution to perform efficiently and effectively—the better its information, the better it can manage its resources. In a competitive environment the institution with better information has a distinct advantage.

Consider a microfinance institution suffering from a weak information system:

> *In the lobby clients queued up at the cashier are waiting impatiently while staff look for a misplaced account register. Another client is complaining about a seemingly arbitrary calculation of interest and penalties.*
>
> *In the credit department several loan officers are sifting through the account registers to see who has paid and who hasn't. Later, if they happen to pass by a delinquent client's business to discuss a late loan, they'll know nothing about the specifics of the account. Two loan officers are meeting with clients. One client is complaining that she repaid her loan weeks ago but is still waiting for a new loan to be approved. The second is complaining that even though his loan is approved, he'll have to wait more than a week for the contract and paperwork—and miss out on buying the used*

machine he wanted. In the back of the room the credit department supervisors, busy as usual dealing with crises, have little idea how their department or staff are performing.

In the accounting department stacks of paper are everywhere. Some junior staff are reconciling savings account balances with the general ledger, others are calculating interest on passbook savings accounts. The senior accounting staff are reconciling bank accounts from months ago and trying to prepare a trial balance for the upcoming board meeting—a task that they'll be unable to complete in time.

In the executive director's office the senior managers are holding their weekly operations meeting. The chief financial officer announces that the institution has run its bank account down and will need to suspend loan disbursements for the week. The operations manager presents the new project proposal under development—much of the information requested by the donor is unavailable or embarrassingly outdated. The executive director lists information requested by a new board member for the upcoming meeting—actual versus budgeted financial and activity information, number of clients by loan size, and a report on the portfolio at risk. When asked how to pull together this information by Friday, the staff just shrug their shoulders.

As more and more microfinance institutions scale up their activities, managers are becoming increasingly aware of the need to improve their information systems

A good information system could transform this institution. The organization may have capable and motivated staff, but if they lack information, they will be unable to perform up to their potential. A good information system can revolutionize the work of field staff, enabling them to better monitor their portfolio and serve their clients, all while working with a growing number of clients. It can enable supervisors to better monitor the work under their responsibility, provide better guidance to their staff, and pinpoint the areas that most require their attention. And it can help executive managers to orchestrate the work of the entire organization by allowing them to monitor the institution's health through a set of well-chosen indicators and by informing critical operational and strategic decisions.

As more and more microfinance institutions scale up their activities, managers are becoming increasingly aware of the need to improve their information systems. For many institutions, methodological issues, staff development, and even financing are no longer the critical constraints to growth. Instead, the most pressing need is often a system to track the status of their portfolios in a timely and accurate manner. The reliability of such systems can make the difference between the success and failure of lending operations—and therefore of an institution.

A system that performs tolerably at a moderate volume of activity can collapse as it's fed more and more information. Manual systems may end up with huge backlogs of unprocessed data. Spreadsheet-based portfolio systems can become unwieldy as the spreadsheet grows. An institution unprepared for rapid growth will eventually undermine the quality of its services and its financial health. But an institution that develops a system capable of producing accurate, timely, and comprehensive information on operations, especially on the loan portfolio, will strengthen its financial performance and expand its client reach. Developing a solid management information system is one of the most important tasks facing microfinance institutions, particularly those scaling up.

This handbook explains how to establish a sound management information system (MIS) for a microfinance institution. The issues are many, they are complex, and they are closely intertwined. Setting up a good information system may require restructuring the institution, reworking staff responsibilities (sometimes even staff qualifications), redesigning work processes and information flows, revising and rationalizing financial policies, investing in computer technology, and more. Information is at the core of any organization's work, so it shouldn't be surprising that introducing a new information system can affect an organization to its core.

It is the daunting demands of this process that explain why most microfinance institutions have a weak system—they are unable to devote the energy and attention it takes to establish a good one. But managers of institutions that have made the investment—who now have access to reliable and timely information—generally say that it was one of the best decisions they ever made.

1.2 What is a management information system?

What exactly is a management information system? For the purposes of this handbook, a management information system is the series of processes and actions involved in capturing raw data, processing the data into usable information, and disseminating the information to users in the form needed.

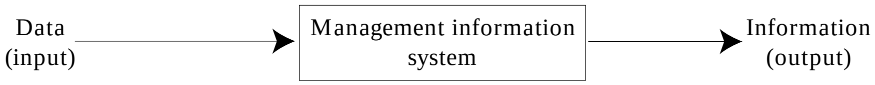
A management information system is the series of processes and actions involved in capturing raw data, processing the data into usable information, and disseminating the information to users in the form needed

An MIS is not simply a computer program, and it involves more than just calculating numbers. Information management is first and foremost people communicating with one another about events that affect the work of their organization. The chart of accounts, all the forms used by an institution—from receipts to loan applications to staff vacation requests—meetings, reports, policies and procedures, the staffing structure, job descriptions, the planning process, and, yes, the computer software—all these and more influence the flow of information in an institution and so, together, make up the management information system.

Note the distinction between data and information in the definition of an MIS. Data are unprocessed facts that give no insight by themselves. A single payment transaction, for example, does not show whether the payment was on time or shed light on the loan's status. Information is processed or transformed data that help someone make a decision or gain insight (figure 1.1). For example, comparing actual payments with scheduled installments reveals the status of the loan and its

FIGURE 1.1

A management information system's input and output



aging—information that can be used to make a decision on loan follow-up or provisioning. An institution can be swimming in data and yet have little information.

1.3 How do the parts of an MIS relate?

A full management information system includes all the systems an institution uses to generate the information that guides management's decisions and actions. A microfinance institution generally has two main systems: the accounting system, centered on the chart of accounts and general ledger, and the portfolio tracking system, covering the performance of accounts for each financial product offered by the institution.[1] Some institutions also maintain a third system, for gathering data on client impact, often at the behest of donors. Microfinance institutions have other information management needs, such as for human resource management. But financial and client activities generate by far the heaviest volume of data for processing. In large institutions the MIS tends to be mostly or entirely computer-based, requiring software programs to capture and report on the necessary information.

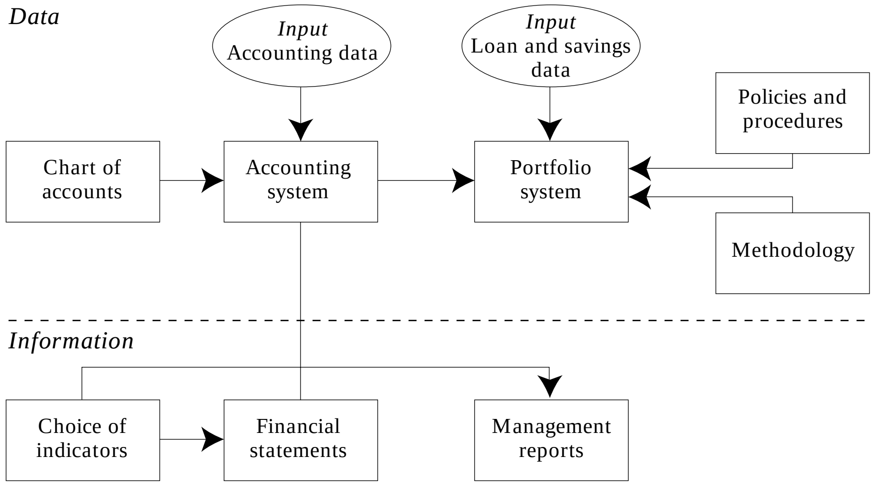
A microfinance institution generally has two main systems: the accounting system and the portfolio tracking system

Figure 1.2 shows the relationship between the accounting system and the portfolio system, together with other elements that affect the MIS. The accounting system is influenced primarily by the chart of accounts (chapter 2). The portfolio system is influenced by policies and procedures and by methodology (chapter 5). Data are processed into information, which is then presented in financial statements and management reports (chapter 3). Influencing the form and content of these reports are the indicators chosen by the institution to monitor performance (chapter 4).

Many indicators and reports are generated by combining information from the accounting system (such as income and expenses) with information from

FIGURE 1.2

The parts of a management information system



the portfolio system (such as number, amount, and size of loans, or number of staff). Although independent, the two systems share data and must be compatible (for more information on the linking of accounting and portfolio systems see section 5.2.1).

Accounting systems should conform to the basic international accounting standards developed by such central authorities as the International Accounting Standards Committee (IASC). General ledger software programs incorporate these accounting standards and conventions, so it is fairly easy to find an accounting program that performs at least the basic functions required of a microfinance institution and provides the essential accounting reports.

It is fairly easy to find an accounting program that performs at least the basic functions required of a microfinance institution

Portfolio systems, by contrast, have no standards or widely accepted guidelines for loan tracking on which to draw. And they must reflect operating procedures and workflow, which vary widely from institution to institution. As a result, each software program for loan tracking differs in the information tracked, the kinds of reports generated, and, most important, the features included. Key features vary widely among loan tracking software programs, such as the type of lending methodology supported,[2] the method for calculating interest and fees, the frequency and composition of loan payments, and the format of reports.

Because there are no agreed on standards for loan tracking systems and because the information to be tracked and reported on is complex, institutions considering how to improve the loan management part of their MIS face several important issues (treated in depth throughout the handbook): Should they purchase an off-the-shelf software package? If so, should they hire a programmer to customize it? Is customization possible? Should the programmer be a consultant or a full-time employee? Dissatisfaction with the features and support of loan tracking systems has led many institutions to develop their own software.

Client impact tracking, because it is often driven by donor interest rather than management needs, is even less standard in approach and thus less amenable to standardized software. Institutions that monitor impact may use information gathered in the loan application or administer questionnaires to a sample of clients. The data they gather normally relate to the type of activity their clients are engaged in—number of employees for production businesses, sales for retail businesses, changes in household income for rural clients, and growth in business assets for urban clients. This wide range of approaches means that the institution must customize each process for gathering and analyzing the data.[3]

1.4 Need experiences with MIS be so frustrating?

A consensus is emerging in microfinance that good information systems are fundamental to the success of institutions. Yet stories of failure and frustration with information systems abound. Many of the stories feature computerized systems that either never work quite right or are prone to crashes just as an institution grows accustomed to relying on them.

What are the keys to developing a good information system? There are three main ones:

- *Thorough identification of information needs.* Managers, field staff, board members, and information systems staff seldom know all the information needs of their institution. They may be aware of several key indicators that need to be tracked, but the indicators may be insufficiently defined—and they may be unaware of other indicators that should be tracked. In addition, systems are often put together in a haphazard and piecemeal fashion, without a thorough assessment of needs. This handbook details the type of information monitored by best practice institutions and outlines approaches for identifying specific information needs and flows.
- *Effective communication between management and systems people.* Financial institution managers and information systems staff generally don't speak the same language. Compounding this communication problem are heavy staff workloads and a tendency to compartmentalize operations. The result, despite the best of intentions, is often a misinterpretation of management requests and a system that does not meet its users' needs. This handbook is aimed at both audiences—information users and systems developers. It uses key concepts and terms from both worlds that are essential to communication.
- *Realistic expectations about information technology.* In an age of computer technology, information users often wonder why they can't have the information they want, when they want it. Meeting that need seems like a straightforward task—especially when they know that all the necessary data are in the computer. This handbook explains the technological issues in computerized information systems, primarily for the nontechnical manager (see annex 1). The intent is to educate information users about what is possible and how much effort it takes to get good information out of a system.

This handbook is aimed at both audiences—information users and systems developers. It uses key terms and concepts from both worlds that are essential to communication

Management can greatly improve the prospects of developing a good information system through a willingness to evaluate and change the way the institution works. Information systems can perform only as well as the institutions they model. If policies, procedures, organigrams, job descriptions, workflows, and the like haven't been properly established, no MIS will function well. So developing and implementing a new MIS, or reworking an existing one, may affect every part of an institution—and generally should, if the process is to be successful.

1.5 What about manual systems or spreadsheets?

Some microfinance institutions use manual systems and spreadsheets (such as Excel or Lotus) to track client accounts and create portfolio reports. These tools are more easily created, altered, and maintained than databases, but their usefulness is much more limited, especially for organizations handling more than 500 active loans. And manual and spreadsheet systems collapse when an institution's structure becomes more complex. It is difficult to consolidate manual or spreadsheet information from multiple branches (box 1.1).

Nonprogrammers find spreadsheets easy to use because they are essentially computerized ledger books whose formatting and calculations can be easily changed. Spreadsheets were designed to analyze data. But for storing and retrieving data and reporting on large amounts of data, databases have a clear advantage over spreadsheets because of their data structure (see annex 1). Spreadsheets are typically two-dimensional—they have rows and columns—and as a result have difficulty expressing and maintaining complex relationships between data. They maintain these relationships through formulas entered into individual cells rather than key fields that can be rapidly sorted and searched, as in a database. So spreadsheets are not the optimal tool for recording client transactions and reporting on a portfolio's aging. But they are extremely useful for analyzing financial and

Developing and implementing a new MIS may affect every part of an institution—and generally should, if the process is to be successful

Box 1.1

The challenges of integrating manual and computerized information systems: The experience of BRAC

BRAC is a Bangladeshi institution serving more than 1.5 million members through 330 branch offices. The head office needs to aggregate a vast amount of data, but branch offices are unable to computerize, so BRAC combines head office computerization with manual branch systems. The process is fraught with problems, but a redesign of the system is expected to solve most of them.

The high degree of standardization in BRAC's rules and procedures ensures that the branch-level manual systems work smoothly. Centralization problems and bureaucratic delays enter the picture once the information leaves the branch office.

Weekly collection forms are completed manually by the loan officers in the branch office. These forms are then checked by the branch and account supervisors before being sent to the regional office, resulting in a three-day delay. The regional office rechecks the forms and transfers the data to a new form—another five-day delay. Once the data are received at the head office, the computer department takes an average of three weeks to process them. Checking for and correcting errors—most related to borrower ID numbers—accounts for about half the time. Yet an external consultant has estimated that 40 percent of the report contents still contain errors.

Adding to the large volume of information, BRAC computerizes both credit and savings data on a weekly basis for every borrower (rather than for groups or centers). The work effort is compounded by the involvement of three departments—the computer, accounting, and MIS departments—leading to a need for regular reconciliation of numbers and to chronic irregularities. The result has been unreliable information, produced in an untimely manner and at significant staff cost.

BRAC plans to pilot a new MIS to correct these flaws. The computer department will produce a pre-prepared sheet for each member with the expected weekly loan installments and savings deposits. Branch staff will simply record the exceptions. Since most members pay on schedule, this system will vastly reduce the information that the accounting department has to enter. The automated forms will also eliminate errors in borrower ID numbers.

BRAC has learned that for computerizing data, systems must be carefully thought out to minimize the potential for data entry errors. Once introduced, errors are difficult to weed out, and doing so can result in significant staff time costs and delays in getting information to decisionmakers.

portfolio indicators and for presenting information. In an MIS, spreadsheets can complement the database system managing the bulk of the data.

Manual systems, while the easiest to understand, are the most corruptible and inefficient method of storing and retrieving financial data. They are prone to abuse and fraud, to mathematical error, and to information loss through improper storage. They are typically slow and labor-intensive in producing reports. And they are cumbersome for statistical analysis of trends and causality.

In a large-volume institution a computerized database is vastly preferable. Many institutions still use manual systems, especially in parts of Asia. But most would probably immediately adopt computerized systems if not for issues of cost, staff capabilities, and viable software options. As information technology improves, the cost of computerization drops, transaction volumes grow, and increased competition rewards microfinance institutions that have better and faster access to information, institutions will face an increased need to move from manual to computerized systems. In the meantime, those designing or improving manual systems will find many of the concepts in this handbook useful.

In a large-volume institution a computerized database is vastly preferable

1.6 Can I find standard MIS software to meet my needs?

No consensus has yet emerged in the microfinance community on an ideal MIS, partly because of the lack of standards (see the introduction to chapter 4). There is no WordPerfect or Lotus 1-2-3—a program an institution can order, install, and use for 80–90 percent of its information needs. After more than 10 years of efforts the field has not yet settled on a short list of promising candidates, or even a handful of programs that work well under certain circumstances. Instead, institutions operating in the same city hire different local software firms to develop systems, and affiliates of international networks each have their own system—or none.

With all the custom software institutions have had developed there is no shortage of accounting and loan portfolio software. But this customized software generally fails to perform up to expectations—and often fails to work at all. And even a loan tracking program that functions acceptably in one institution tends to fail when transferred to another, because of the difficulty of adapting an MIS for the first institution to the needs of the second.

This handbook addresses many of the difficulties in transferring software systems from one institution to another. Among the most important:

- Different definitions in the calculation of financial ratios
- Complexities introduced by variations in methodology
- Myriad techniques for handling portfolio issues (calculation of interest rates and penalties, links between savings and loans, determination of delinquency)
- Local language issues

- Issues related to scale and centralization or decentralization
- National banking and accounting requirements
- Individual preferences of management or MIS staff
- Lack of local, reliable firms to implement systems and provide ongoing technical support.

No consensus has yet emerged in the microfinance community on an ideal MIS, partly because of the lack of standards

BOX 1.2

Managing performance through reporting and information systems: How SHARE did it

SHARE is a microfinance institution operating in the southern Indian state of Andhra Pradesh. Since its establishment in 1993, SHARE has seen its clientele grow to roughly 3,500. It plans to reach an active client base of 11,000 over the next few years by doubling its staff and expanding from four branches to eight.

A critical part of SHARE's expansion strategy is to replace its manual information system with a computerized one that enables management to keep a finger on the pulse of operations. SHARE decided to build a home-grown, cost-effective system from the ground up. At the end of last year it hired a local MIS specialist to design and develop the MIS, install computers in branch offices, and train staff in the use of the new system. To gain a good understanding of SHARE's operations, the specialist worked in one of its branch offices for a few months, and he sought continuous feedback from management and staff about their information reporting needs.

To decentralize the system, SHARE plans to equip each of its branch offices with a Pentium computer. The staff members being trained in the use of the new system are working closely with the MIS specialist to iron out any kinks before the system is installed in all the branches. These staff members will then help train others. The old and new systems are expected to coexist for as long as six months while staff adjust to the new one.

SHARE's MIS builds on a weekly report generated by branch offices. This report contains a brief narrative from the branch manager on key statistics for the week—the number of groups forming, number and amount of loans disbursed, repayment rate, cash position, projections for the following week, and any new issues. Branch offices also prepare concise reports highlighting ongoing activities, documenting staff attendance and performance, and listing new members and groups. Branch office reports arrive every Monday morning at the head office, where the planning and monitoring department computerizes them to generate consolidated statements by Wednesday. These reports are used mainly by the planning department and the executive director.

Branch managers and branch office accountants also prepare monthly balance sheets as well as reports of receipts and payments, group fund (member savings) positions, monthly progress toward targets, cash flow projections for the following month (by week), approved loan applications, and staff evaluations. An analysis of financial ratios for individual branches—all treated as profit centers—and for the institution is prepared and reviewed monthly. Quarterly and annual reports are generated by aggregating the data from the weekly and monthly reports.

The internal control system is set up so that two or three people, including the branch manager, cross-check the documentation and reporting for each group and group member. In the head office the monitoring and internal audit departments periodically supervise the flow of funds and verify the accuracy of financial records.

Ultimately, the effectiveness of an MIS depends on how well it is used. SHARE uses the information its system generates to guide the actions of its management and staff in fulfilling its mission of extending financial services to extremely poor women.

Because of these and many other complications, most experts believe that no single MIS package can be expected to meet everyone's needs. No two institutions have the same information needs, and a single institution will find its information needs changing over time.

Most microfinance institutions can be placed in one of three categories of need for information management, related to their stage of development. In the first category are small, young institutions with fewer than, say, 2,000 clients[4] and no short-term plans for significant expansion in clientele or product range. These are often multiservice nongovernmental organizations (NGOs), offering financial services as one of several service lines. Their needs are basic, and they can get by with a simple system to keep tabs on the quality of the portfolio. A simple system, too, is often all that their staff and budget can handle.

Most experts believe that no single MIS package can be expected to meet everyone's needs. No two institutions have the same information needs, and a single institution will find its information needs changing over time

In the second category are medium-size institutions that have 2,000–10,000 clients and are embarking on significant growth. Many of these institutions are experiencing growing pains—they need to restructure to deal with their growth, bring in new senior managers capable of managing the increased activity and resources, and make their operating procedures more systematic. These institutions now require a much more rigorous MIS—one that has solid security features and a thorough audit trail and handles savings accounts and a large volume of transactions (box 1.2). But many lack the skilled staff to operate a complex and rigorous MIS, and the financial resources to purchase a commercial system or develop a customized MIS in-house. In sum, they need many of the features of a high-end system, but aren't yet ready to maintain one.

The third category consists of large institutions with more than 10,000 clients and plans for continued growth. These mature institutions generally have well-developed operating procedures and capable staff, particularly in accounting and information systems. These institutions are so large that they can generally justify the cost of substantially modifying an existing MIS—or developing a new one—to better meet their needs. The cost can easily exceed $100,000, but the alternative would be loss of automation of some functions, with resulting inefficiencies.

Notes

1. Microfinance institutions tend to focus on credit products, but there are many others, including savings, time deposits, checking accounts, transfers, credit cards, and insurance policies. Each of these broad categories can be further broken down. For an extensive discussion of reporting on different products see the pamphlet on report formats.

2. Institutions use varied lending methodologies, such as solidarity groups, individual lending, and village banking, and each presents different issues for information management. Systems developers should consult the microfinance literature to gain a thorough understanding of the most common methodologies and their implications for system design. See, for example, chapter 6 in Charles Waterfield and Ann Duval, *CARE Savings and Credit Sourcebook* (New York: PACT Publications, 1997).

3. The validity and importance of client impact data are hotly debated. Many experts would argue that collecting impact data that are both trustworthy and reliably attributable to the microfinance institution's services is still far too expensive to be practical for most institutions. These experts would advise microfinance institutions to invest in impact tracking only to the extent that it is required by donors and other constituents.

4. The number of clients is just one of the factors determining how much data needs to be processed. Others include the lending methodology (individual or group) and the frequency of installments. The numerical ranges used in classifying microfinance institutions are rough approximations.

CHAPTER 2

The Accounting System

The accounting system is one of the two core parts of a microfinance MIS—the other is the portfolio system. While not intended to be an accounting handbook, this chapter discusses the elements of an accounting system relevant to designing and using an MIS. It introduces basic concepts in cash and accrual accounting and fund accounting and presents a sample chart of accounts for a microfinance institution.

2.1 Accounting systems

Many accounting guidelines and standards govern the recording and reporting of transactions.[1] Transactions and accounting ledgers are part of a larger, complex system for controlling funds and reporting on their sources and uses. In this system accountants are responsible for showing the movement of funds throughout the institution. They record how funds are received and used and what resources are used to produce or deliver goods and services. To do this, they need a chart (or list) of accounts.

Similar to a database structure, the chart of accounts provides accountants with a structure for posting transactions to different accounts and ledgers. It also determines what appears in the financial statements. The chart of accounts typically designates each account by:

- An account number
- A description—for example, "National Bank checking account," or "accrued salaries, HQ staff"
- The type of account, such as asset, liability, equity, income, or expense. A bank account is categorized as an asset, for example, and salaries are categorized as expenses.

This chapter introduces basic concepts in cash and accrual accounting and fund accounting and presents a sample chart of accounts for a microfinance institution

For microfinance institutions the accounting system can be a simple manual one based on the general journal (where transactions are recorded chronologically as debits and credits), general ledger (where the activity from the general journal is summarized by account number), and other journals required to manage the business, such as purchase, payment, sales, receipts, and payroll journals. (Because of the expense of maintaining multiple manual journals, institutions typically do not prepare all of these other journals.) A manual accounting system typically includes at least the following (figure 2.1):

- Chart of accounts
- General journal
- General ledger
- Subsidiary ledgers (accounts receivable, inventory, fixed assets)
- Transaction reports
- Financial statements.

A computerized accounting system posts transaction entries directly to the general ledger. It replaces the various manual journals with a query function, producing reports as needed.

All microfinance institutions should accrue important expenses

2.2 Cash versus accrual accounting

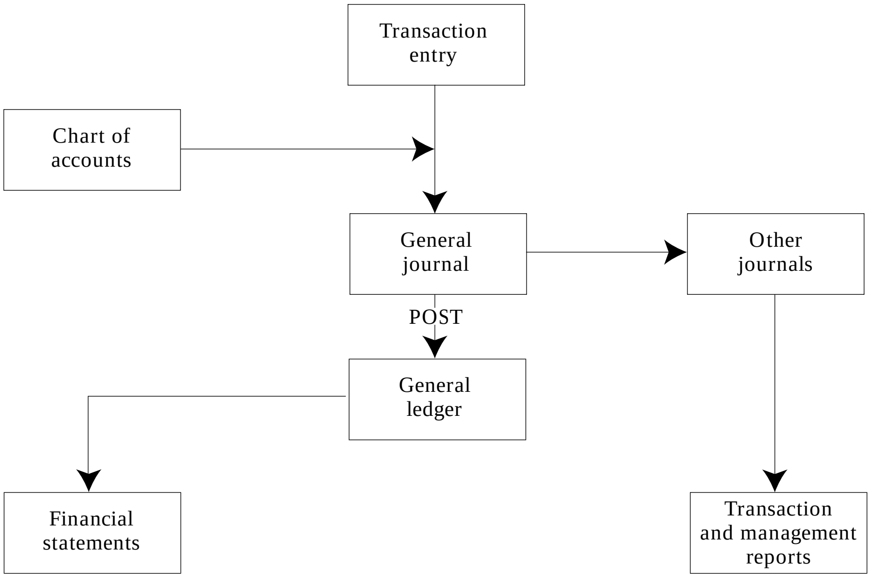
Accounting systems can be cash-based (accounting for income and expenses when cash changes hands), accrual-based (accounting for income and expenses when they are incurred), or modified cash systems (in which most accounting is cash-based, but selected accounts are accrual-based).

All microfinance institutions should accrue important expenses, such as personnel benefits and interest payable on loans that may require only annual interest payments. Otherwise the financial statements will not accurately reflect the real flow of expenses.

Accruing interest receivable on loans to clients is more complex. Accruing interest means calculating at month-end or year-end the interest owed but as yet unpaid. This unpaid interest is considered income for the period considered

FIGURE 2.1

A typical manual accounting system


Transaction entry
Chart of accounts
General journal
Other journals
POST
General ledger
Financial statements
Transaction and management reports

because that is when it was earned. If the client makes a loan payment in the next period, some of that payment goes to pay off the accrued interest. Nonperforming loans could continue to accrue interest that will never be received, inflating reported income. So accrued interest must be aged, just as delinquent loans are: percentages of the overdue income are written off to get a more realistic estimate of the income the institution will eventually receive. Many institutions stop accruing interest income on delinquent loans after a certain number of days.

Although a normal practice for commercial financial institutions, accruing interest is clearly complex, particularly when thousands of loans are involved. Some sophisticated software packages can automatically calculate accrual; if no such system is available, microfinance institutions should generally avoid accruing interest. In a stable, limited-growth institution whose clients make payments frequently (weekly or monthly), the differences between cash and accrual accounting are not significant.

The chart of accounts can be structured to ease reporting of the use of donor funds

2.3 Fund accounting

Donors often require detailed reporting by microfinance institutions on the use of funds they provide (box 2.1). As the next section shows, the chart of accounts can be structured to ease such reporting. The key is to create descriptive account numbers. The techniques described in the following example can be used for fund accounting in either computerized or manual systems, though the example assumes a computerized one. The structure of the chart of accounts is simplified, both for clarity and to demonstrate an alternative approach.

> *ASPIRE, a fictitious East African microfinance institution, has just received funding from NewSystems Foundation to upgrade the computer system, pay computer staff salaries, and purchase new client account and accounting software. ASPIRE wisely constructed its chart of accounts to sort accounts by use and by source of funds. The account number designates the use, and the letter that follows designates the donor. For example, account 5010B describes salary expenses funded by NewSystems (see the section from ASPIRE's chart of accounts in table 2.1). If the accountant wants to see total salary expenses, she can query the software for balances on account 5010*. The star tells the software to search for all accounts designated by 5010.*

BOX 2.1

Innovative arrangements with donors

Even with the techniques described here, fund accounting can be onerous. For an institution with many donors, fund accounting can add greatly to the administrative workload and to operating costs.

To reduce this burden, some microfinance institutions have reached agreements with their donors to pool all donor resources and track them as a single fund. Greater use of such arrangements should be explored by both donors and microfinance institutions.

TABLE 2.1

A section from ASPIRE's chart of accounts

1010	Bank accounts	Current asset
1010A	Bank account, funded by donor A	Current asset
1010B	Bank account, funded by NewSystems	Current asset
1010Z	Bank accounts, general fund	Current asset
1910	Equipment account	Fixed asset
1910A	Equipment account, funded by donor A	Fixed asset
1910B	Equipment account, funded by NewSystems	Fixed asset
1910Z	Equipment account, funded by general fund	Fixed asset
4100A	Funds from donor A	Income, granted funds
4100B	Funds from NewSystems	Income, granted funds
5010	Salary accounts	Salary expenses
5010A	Salaries, funded by donor A	Salary expenses
5010B	Salaries, funded by NewSystems	Salary expenses
5010Z	Salaries, funded by general fund	Salary expenses

The NewSystems grant flows through ASPIRE in three transactions. In the first, funds are received from NewSystems and placed in a bank account.[2] *The accountant for ASPIRE debits account 1010B (the foundation's bank account) and credits its account 4100B (the grant income account for the foundation).*

In the second transaction ASPIRE purchases new computers to update its information systems. The accountant debits account 1910B (equipment funded by NewSystems) and credits account 1010B.

In the last transaction ASPIRE pays the staff who are upgrading the computers and installing the information system. This time the accountant debits account 5010B (salaries funded by NewSystems) and credits account 1010B.

*At the end of the accounting period the accountant wants to print a report for NewSystems, so she queries the computer to print the balances of the accounts designated by ****B. The "mask" of stars will identify any account with a number ending in B.*[3]

Creating a chart of accounts with masking techniques that include or exclude accounts designated by certain digits in the account number provides extra power in recording and reporting information and greatly eases reporting on donor funds.

2.4 The chart of accounts

The design of the chart of accounts is a fundamental decision for every institution. The structure and level of detail determine the type of information that management can access and analyze. Management must be clear about its needs and strike a balance between two extremes. Too sketchy a chart of accounts will not provide information precise enough to generate the sophisticated indicators needed to adequately track performance. But attempting to track too much detail generally means creating too many accounts—overwhelming the accounting department and resulting in information too delayed to be of use in decisionmaking, or so disaggregated that management cannot properly identify and interpret trends.

Nearly all financial indicators used in MIS reports are based at least in part on information recorded according to the chart of accounts. Management should therefore determine what indicators they intend to follow and ensure that the chart of accounts supports those indicators.

The chart of accounts should primarily serve the needs of management. If management's needs are met, the generally less detailed needs of funding agencies, regulators, and auditors will also be met. In some cases, however, regulatory bodies will require institutions under their jurisdiction to use a specific chart of accounts.

2.4.1 The structure of the chart of accounts

The structure of the chart of accounts influences how easily information for different cost centers (branches and programs) can be extracted from the accounting data. The sample structure in table 2.2 is a 10-digit number with three separators: ABCC-DD-EE-FF.[4] This structure allows activity to be tracked by branch office, by program (or service), and by funder.

The first four digits are general account numbers. The first digit normally refers to the type of account (with 1 indicating assets, 2 liabilities, 3 equity, and so forth). The second digit loosely identifies a group with common characteristics—for example, cash, portfolio, and accrued expenses. The next two digits indicate specific accounts in the group. For example, cash, petty cash, checking account 1, and checking account 2 would all be accounts in the cash group of the assets category.

Following the four-digit account number are two two-digit groups and two single-digit groups. These groups could appear in any order and could be one digit rather than two if not much disaggregation is expected in the group.[5] In the example the first two-digit group indicates costs by program. Programs are subdivided into credit, savings, training, and marketing programs. Because not all transactions can be identified by program, two numbers are set aside—00 for balance sheet accounts, and 01 for head office activity, or overhead, not tied to a program. Costs for staff identified with a program would be coded to that program. Costs covering more than one program can be split proportionately among the programs, but this can add greatly to the complexity of transaction coding and should be kept to a minimum.

The second two-digit group separates income and expenses by branch office and functions as the program codes do. Distributing costs by branch office is usually easier than doing it by program, because branch offices generally have designated employees and fixed assets and can also have designated clients and loans.

The next set of digits allows the tracking of income and expenses by source (see section 2.4.2). Again, 0 indicates balance sheet accounts, and 1 identifies the general treasury fund for resources not tracked by a funder. All other codes designate a specific funder.

TABLE 2.2

Sample chart of account structure

ABCC-DD-EE-FF, where:
ABCC = Account
A = Type of account (asset, liability)
B = Group (cash, portfolio, receivable)
CC = Individual accounts
DD = Program
EE = Branch
FF = Funder

Program codes (DD)

00	Balance sheet accounts
01	Head office
10–19	Credit programs
10	Group lending 1
11	Group lending 2
12	Individual loans
13	Small business credit
14–19	(open)
20–29	Savings programs
21	Passbook savings
22	Savings club
23	90-day certificates of deposit
24–29	(open)
30–39	Training programs
31	Management training
32–39	(open)
40	Marketing assistance
41–99	(open)

Branch codes (EE)

01	Head office
10	Central regional office
11	Central region branch 1
30	Western regional office
31–99	(open)

Funder codes (FF)

00	Balance sheet (assumes no separate funds)
01	General treasury fund
20–29	Government/multilateral and bilateral (restricted)
21	U.S. Agency for International Development (USAID) lending funds
22	National development fund
30–44	Government/multilateral and bilateral (unrestricted)
31	Inter-American Development Bank (IDB)
50–59	Private sources (restricted)
60–69	Private sources (unrestricted)
70–99	(open)

How would this structure work in practice? Here are some examples:

- If 1012 is the account for *cash in banks, lending*, then 1012-00-01-21 denotes money held by the head office (code 01), restricted for lending, from USAID (donor code 21). Since this bank account is a balance sheet account, 00 is used for the program code.
- If 4120 represents *income from loan commissions*, then 4120-12-11-01 represents commission income from individual loans (program code 12) from central region branch 1 (branch code 11), designated for the general treasury fund (funder code 01).
- If 5212 represents *staff salaries*, then 5212-31-21-31 represents salaries for management training program staff (program code 31) in Northern branch 1 (branch code 21), paid for with IDB funds (funder code 31).

2.4.2 A sample chart of accounts

The chart of accounts that a microfinance institution adopts should of course reflect its own operations, structure, and information needs. But the sample in table 2.3 can serve as a starting point (though it may not be consistent with some regional accounting systems, such as the French system; see section 2.4.3). For detailed descriptions of the principal accounts in the sample chart see annex 2.

For detailed descriptions of the principal accounts in the sample chart see annex 2

TABLE 2.3

Sample chart of accounts

Asset accounts

1000	*Cash and equivalents*
1000	Cash in vault
1005	Petty cash
1010	Cash in banks
1011	Cash in banks, operating
1012	Cash in banks, lending
1013	Cash in banks, savings
1050	Reserves in central bank
1100	Short-term investments
1200	*Loan portfolio*
1210	Portfolio, type A
1220	Portfolio, type B
1240	Restructured loans
1300	*Reserves for possible losses*
1310	Loan loss reserve†
1320	Interest loss reserve (for accrual systems only)*†
1400	*Interest and fees receivable*
1410	Interest receivable, current loans*
1420	Interest receivable, nonperforming loans*
1440	Interest receivable, rescheduled loans*
1450	Commissions receivable*
1459	Other loan fees receivable*
1500	*Receivables*
1510	Accounts receivable*
1520	Travel advances
1525	Other advances to employees
1530	Other receivables*
1600	*Long-term investments*
1610	Investment A
1612	Investment B
1700	*Property and equipment*
1710	Buildings
1711	Depreciation, buildings†
1720	Land
1730	Equipment
1731	Depreciation, equipment†
1740	Vehicles
1741	Depreciation, vehicles†
1750	Leasehold improvements
1751	Depreciation, leasehold improvements†
1800	*Other assets*
1810	Prepaid expenses

Liability accounts

2000	*Payables*
2010	Trade accounts payable
2012	Accounts payable, members
2014	Accounts payable, employees
2100	*Interest payable*
2110	Interest payable, loans*
2120	Interest payable, passbook savings*
2130	Interest payable, time deposits*
2150	Interest payable, other*
2200	*Client deposits*
2210	Collateral savings
2220	Voluntary savings
2230	Time deposits
2300	*Loans payable, short term*
2320	Loans payable, bank 1
2322	Loans payable, bank 2
2330	Loans payable, other
2350	Lease payable

(Table continues on the following page.)

TABLE 2.3 (continued)

Sample chart of accounts

Liability accounts

2400	*Loans payable, long term*
2420	Loans payable, bank 1
2422	Loans payable, bank 2
2430	Loans payable, other
2450	Lease payable
2500	*Accrued expenses*
2510	Accrued salary*
2520	Accrued payroll taxes*
2530	Accrued benefits, insurance*
2540	Accrued benefits, leave*
2550	Accrued federal taxes*
2590	Other accrued expenses*
2600	*Deferred revenue, program*
2610	Deferred interest
2620	Deferred commissions
2622	Deferred loan service fees
2700	*Deferred revenue, grants*
2710	Deferred revenue, grant 1
2712	Deferred revenue, grant 2

Equity accounts

Incorporated institution	
3000	*Shareholders' capital*
3010	Paid-in capital
3020	Common stock at par value
3030	Donated capital, current year
3040	Donated capital, previous years
3100	*Gain (loss) from currency adjustments*
3200	*Retained earnings, current year*
3300	*Retained earnings, previous years*

Nongovernmental organization	
3000	*Fund balance*
3010	Unrestricted fund balance
3020	Fund balance, credit program
3030	Fund balance, noncredit program
3100	*Gain (loss) from currency adjustments*
3200	*Surplus/(deficit) of income over expenditure*

Income accounts

4000	*Interest income*
4010	Interest income, performing loans
4020	Interest income, nonperforming loans
4040	Interest income, rescheduled loans
4100	*Other loan income*
4120	Income from commissions
4122	Income from loan service fees
4124	Income from closing costs
4130	Penalty income
4140	Income from other loan fees
4200	*Fee income (noncredit)*
4210	Classroom fees
4220	Income from other fees
4300	*Bank and investment income*
4310	Bank interest
4320	Investment income
4400	*Income from grants*
4410	Restricted, government
4420	Restricted, private
4430	Unrestricted, government
4440	Unrestricted, private
4450	Individual contributions
4500	*Other income*
4510	Miscellaneous income

The number of accounts—particularly in the income and expense sections—can be greatly reduced by using the techniques described in section 2.4.1. For example, rather than have separate accounts for staff costs at different levels and locations, an institution can set up a single expense account, using program codes and branch codes for disaggregation.

TABLE 2.3 (continued)

Sample chart of accounts

Expense accounts

5000	*Financing expenses*
5010	Interest on loans
5014	Bank commissions and fees
5020	Interest on client savings
5030	Other financing costs
5100	*Loss provisions*
5110	Loan loss provisions
5120	Interest loss provisions*
5200	*Personnel expenses*
5210	Salaries, officers
5212	Salaries, others
5214	Honoraria
5220	Payroll tax expense
5230	Health insurance
5232	Other insurance
5240	Vacation
5242	Sick leave
5250	Other benefits
5300	*Office expenses*
5310	Office supplies
5312	Telephone and fax
5314	Postage and delivery
5316	Printing
5320	Professional fees
5322	Auditing and accounting fees
5324	Legal fees
5330	Other office expenses
5332	Insurance
5400	*Occupancy expenses*
5410	Rent
5420	Utilities
5430	Maintenance and cleaning
5500	*Travel costs*
5510	Airfare
5514	Public ground transportation
5516	Vehicle operating expenses
5520	Lodging costs
5530	Meals and incidentals
5540	Transport of goods
5542	Storage
5550	Miscellaneous travel costs
5600	*Equipment*
5610	Equipment rental
5620	Equipment maintenance
5630	Equipment depreciation
5640	Vehicle depreciation
5650	Leasehold amortization
5700	*Program expenses*
5710	Instructional materials and supplies
5730	Books and publications
5740	Technical assistance
5800	*Miscellaneous expenses*
5810	Continuing education
5820	Entertainment
5900	*Nonoperating income and expenses*
5910	Gain/(loss) on sale of investments
5920	Gain/(loss) on sale of assets
5930	Federal taxes paid
5940	Other taxes paid
5990	Other

* An account related to accrual systems. For more information on the differences between cash and accrual systems see section 2.2.

† A contra account, representing either loan loss reserves or accumulated depreciation. Contra accounts are negative in value and reduce the value of their associated accounts.

Source: Based closely on a sample chart in Margaret Bartel and others, *Fundamentals of Accounting for Microcredit Programs* (New York: PACT Publications, 1994).

In general ledgers accounts generally progress from assets and liabilities that are most liquid (such as cash) to those that are least liquid (such as fixed assets). When possible, related accounts should have related numbers: for example, if the interest income on rescheduled loans is account 4040, the loan portfolio for rescheduled loans could be 1240.

2.4.3 The French accounting system

The examples and the financial statement presentation in this handbook are based on International Accounting Standards (IAS). Readers in countries that use adaptations of the IAS and the U.S. and U.K. Generally Accepted Accounting Principles (GAAP) should be familiar with the chart of accounts and financial statement formats. Readers who use the French accounting system should note that it contains many differences in these formats. Although annex 2 presents a French-language chart of accounts, which is based on the one developed by the BCEAO (Banque centrale des États d'Afrique de l'Ouest) for microfinance institutions, readers using the French system should consult a professional accounting firm for assistance in designing their chart of accounts.

2.5 Financial statements

All accounting systems for microfinance institutions must produce at least the following reports:

- Income statement
- Balance sheet
- Cash flow statement.

For standard formats for these reports see the pamphlet.

Notes

1. The reader should refer to an accounting textbook or the International Accounting Standards Committee handbook for accounting principles.

2. Some donors prefer to have their donated funds in a separate bank account, a practice this example follows for simplicity. But it is possible to use one bank account for all donors if there is a good fund accounting system. The single bank account is broken down into three separate accounts in the chart of accounts, for example, 1010 (general balance), 1010A (donor A balance), and 1010B (donor B balance). The balances for the individual accounts should sum to the bank account balance.

3. More sophisticated accounting programs allow masking based on a range of numbers rather than specific digits.

4. The structure proposed here is based on work by Tony Sheldon, finance adviser to Women's World Banking.

5. Using a single digit allows up to 10 levels of separation if only numerical digits are used. Some software also allows use of alpha characters, permitting up to 36 levels of separation (26 letters plus 10 numbers).

CHAPTER 3

Creating Reports

The part of an MIS that everyone sees and uses is reports, yet a chronic weakness of information systems is inadequate reports. This chapter provides guidance on designing reports to be as useful as possible and makes recommendations on the types of reports and on the content and format most valuable to microfinance institutions. It suggests a minimum reporting package, organized by type of user. The pamphlet on sample reports, designed as a companion to this chapter, presents the reporting package by type of report.

Reports are essential for distributing information and thus enabling users of that information to perform their jobs well and make appropriate decisions. This chapter introduces a framework for reporting information from the perspective of those who use the information—clients, field staff, branch and regional managers, senior managers, board members, shareholders, and donors. Different groups of users need to see the same types of reports—activity reports, savings reports, loan portfolio reports, income statements, balance sheets, cash flow reports, operational summary reports—but with varying content. A good MIS will therefore produce reports in a hierarchical structure, starting with detailed transaction reports useful at the branch level and moving up to summarized financial statements and operational information needed by senior management and the board of directors. The reports should be designed so that the detail at one level supports the summarized information at the next level.

This chapter introduces a framework for reporting information from the perspective of those who use the information

The minimum reporting framework presented in this chapter contains 38 reports, although users will find that fewer than a dozen of them combined will meet 80 percent of their information needs. (For samples of the reports referred to in the text please see the accompanying pamphlet.) The mix of reports in a system will depend on the institution's size, level of operations, and range of financial products; some institutions will need more reports, some will need fewer.

3.1 Defining information needs

The starting point in developing an MIS is to determine what information the institution needs to perform well. That means defining the needs of different users of information. Good information provided in a useful form on a timely basis empowers all the stakeholders in the institution—donors, investors, regulators, clients, other institutions, board members, executive management, the accounting department, the credit department, branch managers, field staff, and all other staff—to participate meaningfully in the institution. But this potential is rarely realized. The problem is not just poor programming. The problem begins with poor conceptualization of the information people need to fulfill their responsibilities.

Often people are unaware of the kinds of information that can be generated. Never having had good information, they have learned how to get by without it. Thus defining information needs cannot consist simply of asking users what they want. Institutions need to draw on best practices in the microfinance community. What works for other microfinance institutions? What lessons have been learned? What can information technology specialists offer?

A frequent danger is requesting too much information

A frequent danger is requesting too much information. This can result from the frustration of having lived without good information. It can also result from insufficient experience in working with information and thus lack of knowledge about what information is really needed—and can be acted on regularly. The result: As long as it is technologically possible to have information, people request it. Why is that a danger? Staff swamped by printouts often don't know where to focus their attention. They end up with more data than information.

So the starting point in determining an institution's information needs is to identify the users of information—all the stakeholders in the institution—and evaluate the needs of each group of users. For each group the following questions need to be answered to identify what information users need, how the information should be presented, and what frequency and timeliness are required:

- What key information do the users need?
- What key indicators or ratios do the users need to monitor to perform their jobs well?
- What additional information should the users have to be knowledgeable about the organization's performance and achievement of broader goals?
- What supplemental information could be included in reports to improve staff performance (such as phone numbers on delinquency lists)?
- How can all the information the users need be clustered in the minimum number of useful reports provided in the necessary timeframe?
- How can key indicators be incorporated so as to enable the users to monitor trends in them?
- How can reports be designed to meet the needs of different users?
- How frequently and how immediately do the users need to receive the information?
- How might the users' information needs change in the future, and how would those changes affect the design of the MIS?

The answers to these questions will help determine the design of reports.

3.2 Key issues in report design

One of the most common weaknesses of information systems is poorly designed reports. An MIS may have a wealth of data and track all activity accurately, but if information does not reach staff in a useful form, the MIS is virtually worthless (box 3.1). There also can be weaknesses on the users' side. Users often misinterpret the information in reports because they don't know the precise definitions used in producing the numbers or the implications of those numbers. Good documentation and staff training can address both weaknesses.

Information is not all alike. As the following sections show, information needs to be carefully selected, processed, and presented in a way that fits the needs of the user and the purposes to which it will be put (box 3.2).

If information does not reach staff in a useful form, the MIS is virtually worthless

3.2.1 Content

Reports should generally focus on one issue, such as portfolio quality or liquidity, and present all information pertinent to that issue. Although that may mean

BOX 3.1

Improving MIS report formats: The experience of the Workers Bank of Jamaica

The Workers Bank of Jamaica grew out of the Government Savings Bank, established in 1870. The Workers Bank inherited the Post Office Banking Network, with almost 250 post office banking windows where small savers maintained accounts. By 1995 the Post Office Division had more than 95,000 small savers, with more than $10 million in deposits. That same year the bank decided to set up a microbanking unit to expand microfinance services by offering microloans through the Post Office Division.

The bank was in the early stages of developing a comprehensive MIS. But it saw a need to purchase a system to manage its small loans and the small savings accounts in the Post Office Division until the larger MIS was fully operational. After analyzing several systems, the bank chose an internationally available system to manage its postal banking operation.

Although the system provided adequate capabilities for inputting information and for financial calculations, the bank found its standardized reports insufficient. Management was not receiving the accurate and timely information it needed about portfolio activity by loan officer, post office, and region. And neither loan officers nor managers were getting reports that would enable them to properly manage a microloan portfolio with weekly payment cycles. To help develop report formats that would better meet the bank's needs in managing its new microloan portfolio, the bank hired an independent consultant with many years of experience in computer programming and managing microfinance institutions to advise on their design.

The new report formats meet the needs of loan officers and managers for controlling delinquency and managing a growing microloan portfolio. They provide timely and accurate information, they are easy to use, and they customize information to fit the needs of users.

Source: John Owens, former microenterprise project manager, U.S. Agency for International Development, Jamaica.

BOX 3.2

Fitting information to its uses

Information has different characteristics, depending on the purpose for which it is used. And the same information will need to be presented in different forms for different uses. There are three levels of information use in an organization—strategic, management, and operational—and a fourth one that is external.

Information for strategic planning

Strategic information is used primarily by the institution's board and senior management. Strategic information such as the national distribution of microentrepreneurs, trends in the informal economy, and the institution's coverage helps decisionmakers determine whether the institution is meeting its ultimate objectives. Strategic information also supports decisionmaking on the acquisition and allocation of resources, such as planning and budgeting for growth, opening and closing branch offices, and developing new financial products.

Strategic information is predictive, dealing with the future and the relative unknown. It encompasses such issues as projected economic growth, inflation rates, competition, and changes in government policies. Strategic information is oriented toward the long term. And because it affects the directions that the institution takes, the future existence of the institution depends on its quality.

Information for management control

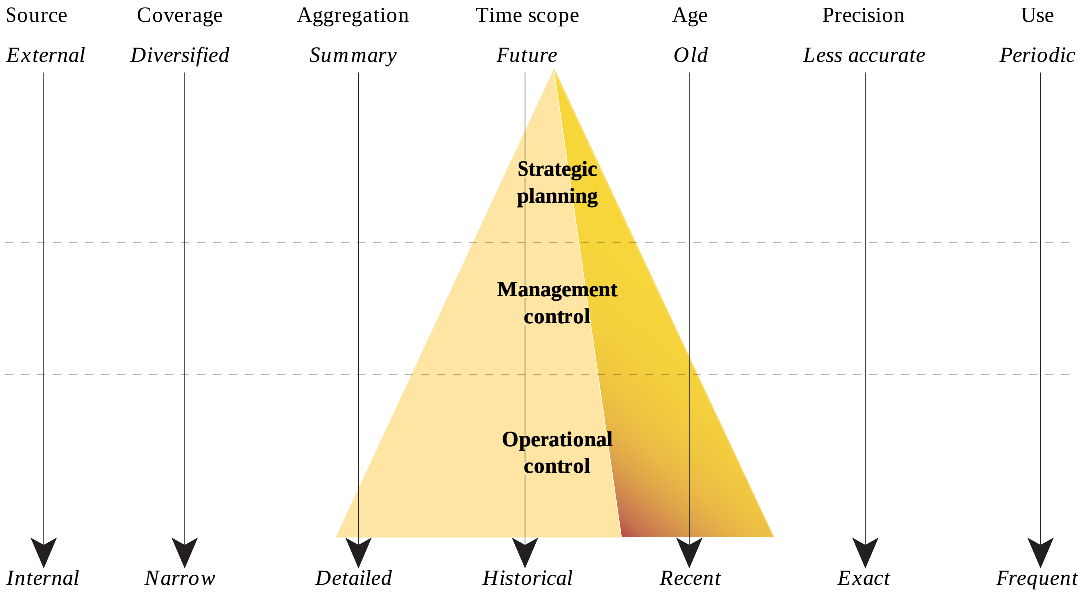
Management information is used primarily by the executive director, chief financial officer, and senior department heads. These managers need information on the use of resources and whether or not resources are being used as planned. Financial reports and activity reports that compare actual performance with budgets and annual objectives fulfill this need. Decisionmakers need management information to maintain control of the institution's activities and performance. Thus they monitor monthly portfolio quality reports, for example, so that they can react to any warning signs in the reports. Management information focuses on the medium term, from three months to a year.

Information for operational control

All staff responsible for day-to-day activities need operational information that enables them to accomplish their tasks—such as disbursing loans, collecting payments, carrying out training programs, or paying bills. Operational information enables the user to take action. A delinquent client report identifies which clients a loan officer needs to visit. A delinquent loan follow-up report enables a supervisor to ensure that corrective action is being taken. Operational information focuses on the short term.

BOX FIGURE 3.1

Characteristics of data and information at different levels of use



Source: Adapted from Rolland Hurtubise, *Managing Information Systems: Concepts and Tools* (West Hartford, Conn.: Kumarian, 1984).

BOX 3.2 (continued)

Fitting information to its uses

Characteristics of information

The three levels of information use can be depicted in a pyramid whose shape roughly follows that of an organizational pyramid (box figure 3.1). Strategic information is needed at the top of the organization, and operational information is used by the vast majority of employees. The characteristics of the information vary along several lines, depending on the level of use.

Source

Virtually all operational data are generated from internal sources—accounting records, client files, staff reports. The more strategic the use, the more information must be drawn from external sources, such as inflation rates, growth trends, and pending legislation.

Coverage

Strategic information deals with a diversity of topics and looks at issues related to the institution as a whole. Moving down the pyramid, information becomes more defined, more narrow in focus, relating to single activities, departments, or employees.

Aggregation

Strategic information may look at loan repayment performance for the institution as a whole (and compare it with repayment for other institutions—an external source of information). Management information may look at repayment performance for each branch office, line of credit, or loan officer. Operational information will look at repayment performance for each loan.

Time scope

Strategic information is forward-looking, predictive, and speculative. Operational information is based on historical data—such as which clients made their loan payments yesterday. Management information compares actual (or historical) data with budgeted (or predictive) targets.

Age

Operational data are based on recent information—in some cases the more recent the better. Loan officers need to know as soon as possible which clients have paid and which are delinquent. Even if staff do not visit delinquent clients until five days after a missed payment, the information needs to be up to date to ensure that they do not visit clients who made their payment on the fourth day. Strategic data can be more dated.

Precision

Precision is most important for operational information, on which staff are likely to take immediate action. Cashiers need to know the precise interest and penalties to charge clients; accountants need to know precise amounts to write checks for recently approved loans. Management information can tolerate some imprecision; supervisors can review financial statements that are only 95 percent complete and still reach meaningful conclusions. Strategic information tolerates the broadest range of uncertainty because it deals with the future.

Frequency of use

Operational information must be generated frequently—monthly, weekly, even daily, and sometimes on demand. Management information is less frequent, usually monthly or quarterly. Strategic information is needed only periodically—usually once a year.

Information for external needs

Information is also required by external users, such as clients (or members), donors, investors, regulators, other microfinance institutions, government agencies, and the media. Some external users will utilize information generated for one of the other three levels—for example, borrowers will require repayment schedules also used by operational staff. Others will require information from several levels—for example, a donor may want to know local inflation rates, the institution's cost recovery, and several human interest stories about clients. The sometimes limited control over the external reporting requirements—which can change as external relationships change—argues for an open, flexible approach to information management.

repeating some information in more than one report, this repetition is normally preferable to the user's having to assemble information from different reports, particularly if the reports are issued at different time intervals.

3.2.2 Categorization and level of detail

In organizations of substantial size the same information might need to be presented at different levels of aggregation. For example, portfolio quality might be reported for each loan officer in a branch office report, for each branch office in a regional office report, and for each region in a report to the board. The same information might also need to be organized by different categories. To assess repayment, an institution's management might need to analyze portfolio quality not only by loan officer and branch office, but also by loan product, funding source, or client characteristics.

For peer comparisons, comparative information from other areas is essential. For example, a branch office manager should receive not only statistics for the branch and for each loan officer in the branch, but also statistics on other branches.

Because designing a sophisticated report can be time-consuming and information can be presented and analyzed in unlimited ways, a microfinance institution must decide which approaches to organizing information it will use regularly—for example, by officer or branch office—and invest in automating these reports. There will probably be a need to analyze data by other criteria less frequently—such as repayment performance by size of loan or type of business—but these analyses can be done manually, by importing the data files into a spreadsheet or by using a report writer (a software application that allows users to define and generate reports without requiring source code programming).

Reports need to be carefully designed around the timing of information needs in the institution

3.2.3 Frequency and timeliness

Reports need to be carefully designed around the timing of information needs in the institution. If loan officers visit delinquent clients every Tuesday, for example, weekly delinquency reports need to be ready Tuesday morning. Monthly financials may need to be ready for regularly scheduled board meetings. Some information is required daily, and some is needed weekly, monthly, quarterly, or annually. Other information is required on an ad hoc basis, and the system must be capable of generating it on demand.

3.2.4 Identifying information

All reports should have standardized headers and footers with important identifying information. Each report should have a unique *title*. Also helpful is a *report number* (ideally associated with the menu selection where the report is found). Reports should display the *date and time of printing*, to avoid confusion when corrected reports are printed. Each report should also display the *time frame* that its information covers. For example, a report printed on June 15, 1997, might present an income statement for March 1–31, 1997. And each report should indicate the *preparer*, information that can normally be automatically extracted from the preparer's log-on identity. All this information can be divided between the headers and footers that appear on each page.

3.2.5 Trend analysis

Whenever possible, important reports should include trend information on key indicators (see section 4.1.2 for information on trend analysis). Some possibilities:

- *Incorporate a series of consecutive columns for different points in time.* For example, columns could present information for each month in the year. See report E1: SUMMARY BALANCE SHEET.
- *Include a second column with a longer-term average for comparison.* For example, a column showing amount disbursed in the current month could be followed by a second column showing average monthly disbursement for the previous three months. A third column could give the percentage change in the current month relative to the longer-term average.
- *Provide a comparison of actual and budgeted figures.* Microfinance institutions normally set targets for activity indicators (number of loans disbursed, number of active clients) at the beginning of the year. They also set budgetary targets (expenses, income generated, outstanding portfolio). Monthly and year-to-date cumulative totals can be compared with these budgetary targets to monitor trends. See report D5: SUMMARY ACTUAL-TO-BUDGET INCOME STATEMENT.

For sample layouts of trend reports see section 3.2.8. See section 3.2.9 for examples of how to use graphs to convey trend information.

3.2.6 Period covered

Reports cover different lengths of time. They can generate sums, averages, and net changes for a day, a week, a month, a fiscal year, a previous period (such as the past three months), and life of project.[1]

3.2.7 Usability

Reports are generated to be used. So, to optimize their design, there should be careful study of how they are used and under what circumstances. For

BOX 3.3
Rules for designing good reports

1. Use standard letter-size paper whenever possible.
2. Present all information pertinent to an issue in a single report rather than spread over several reports.
3. Present information at the appropriate level of aggregation for the user.
4. Include identifying headers and footers in every report and explanatory legends at the end.
5. Study how reports are used and continually improve them.

example, loan officers need a single report showing the status of each client in their portfolio. Since they carry it with them in the field, that report should be a manageable size—ideally, fitting on a few pages of standard letter-size paper. It should concisely present all necessary information in a single line to ease review. It should contain useful reference information so that staff won’t have to look elsewhere. For example, if many clients can be contacted by phone, a delinquency report should include clients’ phone numbers. Reports should also include legends at the end explaining symbols or abbreviations used and defining important indicators prone to misinterpretation.

3.2.8 Report templates

The pamphlet presents a variety of reports, but institutions will need to create many additional specialized reports. This section presents three templates that can be used in defining new reports: single- and multiple-level point-in-time reports, which present information for a specific time, such as the end of the month, and trend reports, which present information in a form that allows the interpretation of changes.

Single-level point-in-time reports

Figure 3.1 shows a template for point-in-time reports, such as loan officer operating reports. This format is used often for operational reports at the branch office level (see figure 3.6). Each page of the report includes a complete header at the top. Each line represents a client account, branch office, or loan officer. Each column represents a piece of data or a financial indicator, such as current outstanding balance, disbursement date, or phone number. Where relevant, totals are included. A legend at the end of the report explains any symbols used. See report C2: Delinquent Loans by Loan Officer.

Figure 3.1

Single-level point-in-time report template

Report date: 25/04/96	Report title	Report no.: xxxx
Prepared by: A. Wong	Branch office: <put name here>	Printed: 26/04/96 13:50

Account number	Client	Data item 1	Data item 2	Data item 3
90-00020-5	Client 1			
90-00024-5	Client 2			
90-00048-5	Client 3			
90-00033-5	Client 4			
90-00024-5	Client 5			
90-00027-5	Client 6			
	Totals			

< define symbols used in column headings here >

FIGURE 3.2

Multiple-level point-in-time report template

Report date: 25/04/96	Report title	Report no.: xxxx
Prepared by: A. Wong	Branch office: <put name here>	Printed: 26/04/96 13:50

Branch/loan officer	Data item 1	Data item 2	Data item 3
Branch A			
Loan officer 1			
Loan officer 2			
Loan officer 3			
Branch B			
Loan officer 1			
Loan officer 2			
Loan officer 3			
All branches			

< define symbols used in column headings here>

Multiple-level point-in-time reports

Figure 3.2 shows a useful variation of the point-in-time report that provides information at several different levels—by loan officer and branch and for the institution as a whole. The format can be expanded as the institution grows by simply adding new lines for loan officers and branches. Regional aggregate data could also be incorporated. See report C5: SUMMARY OF PORTFOLIO AT RISK BY BRANCH AND PRODUCT.

Trend reports

Figure 3.3 shows a template for trend information. Consecutive columns contain information for the chosen periods (weeks, months, quarters, or years). Columns might also show quarterly or fiscal year totals, annual budgets or projected amounts, and the ratio of actual to budgeted amounts. See report G figure 4 SAMPLE SECTION WITH ACTIVITY INDICATORS.

FIGURE 3.3

Trend report template

Report date: 25/04/96	Report title	Report no.: xxxx
Prepared by: A. Wong	Branch office: <put name here>	Printed: 26/04/96 13:50

Description	Month 1	Month 2	Month 3	Fiscal year total	Projected amount	Actual to projected
Section 1						
Data item 1	3,000	3,500	3,800	10,300	10,000	103%
Data item 2						
Data item 3						
Data item 4						

< define symbols used in column headings here>

3.2.9 Graph analysis

Graphs are ideal for presenting information. But systems often produce too few graphs or graphs of a type inappropriate for the information presented. Here are some suggestions on key information to provide in monthly graphs, along with appropriate formats:

- Portfolio in arrears more than a certain number of days (line chart)
- Portfolio in arrears by aging category (area chart; see figure 3.4)
- Average loan size (bar chart)
- Total loan disbursements (bar chart)
- Total outstanding portfolio (bar chart with a line representing annual projections)
- Total active clients (bar chart with a line representing annual projections)
- Number of new clients and number of dropouts (side-by-side bar chart)
- Income and expenses (line chart with two lines)
- Expenses by category (area chart)
- Yield compared with inflation rate (line chart with two lines).

Information from two categories can be combined to show potential relationships. For example, figure 3.5 shows the relationship between arrears and portfolio growth.

Key graphs, such as those showing portfolio in arrears and actual and projected activity, should be updated regularly and posted in a prominent place so that all staff can monitor performance.

3.3 Reporting framework

This section provides the framework, or conceptual structure, underlying the set of sample reports in the pamphlet. Reports are grouped by level of user (for exam-

FIGURE 3.4

Area chart

Portfolio at risk by number of days

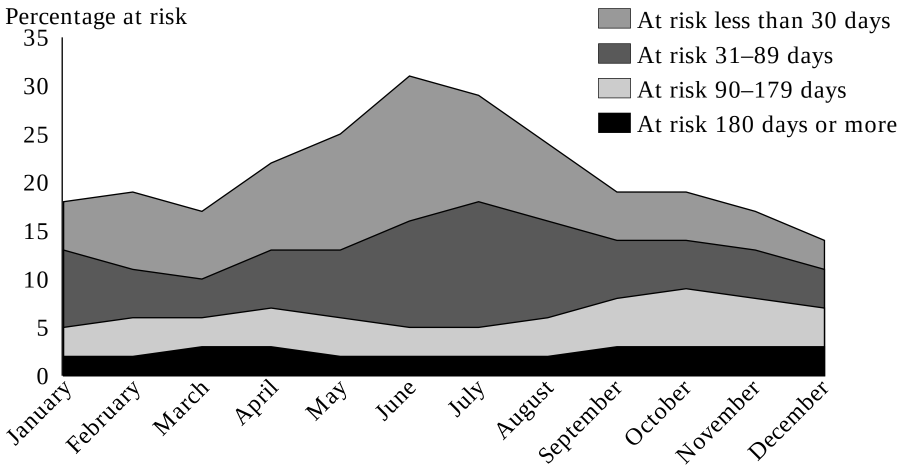
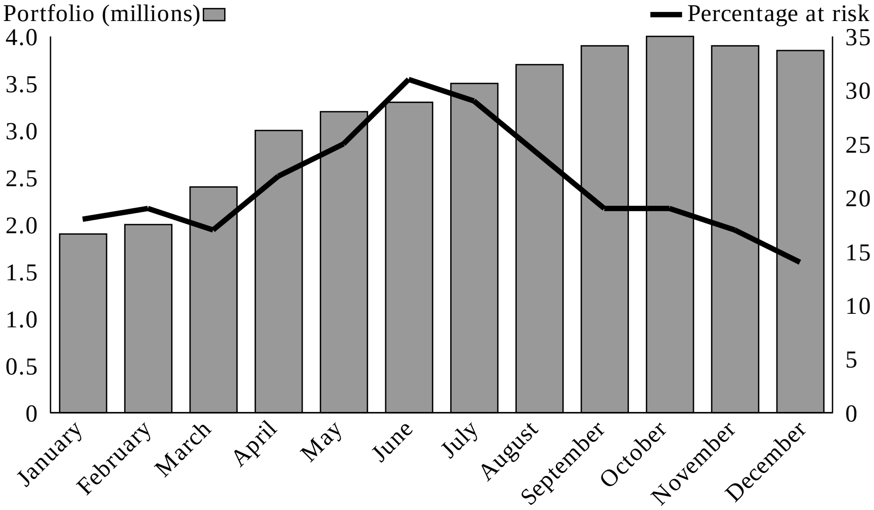


FIGURE 3.5

Trend comparison chart

Portfolio growth and share at risk



ple, field staff) and by category (for example, loan portfolio reports). The framework and the reports are illustrative; institutions will need to adapt them to their needs, bearing in mind the issues discussed in section 3.2.

The reporting framework summarizes the main reports that should be produced for each level of users. The user levels can be portrayed in a structure similar to an organizational pyramid, with users' needs determined by where they are in the pyramid (see figure 3.6 and box 3.2).

The appropriate reporting framework for an institution depends on its circumstances. The sample reporting framework here is for a fictitious institution, ASPIRE, that provides 4,000 clients with credit and savings services through a branch network. ASPIRE also runs a small nonfinancial services project that is analyzed separately in the financial statements. Microfinance institutions whose size, structure, or services are different would, of course, require somewhat different reports (box 3.4).

The reports can be grouped in seven categories:

- A: Savings reports
- B: Loan activity reports
- C: Portfolio quality reports
- D: Income statement reports
- E: Balance sheet reports
- F: Cash flow reports
- G: Summary operational reports.

Many reports are used at several levels. For example, the same SUMMARY BALANCE SHEET might be used by both board members and shareholders, and DELINQUENT LOANS BY LOAN OFFICER might be used by both field staff and branch managers.

BOX 3.4

Minimum list of reports for a small, credit-only micofinance institution

This suggested list of reports would be adequate for a credit-only microfinance institution working with about 1,500 clients through a single office. This list reduces the reporting framework from 38 reports to 16.

Category A: Savings reports
No reports required

Category B: Loan activity reports
B1: Loan Repayment Schedule
B2: Loan Account Activity
B6: Active Loans by Loan Officer

Category C: Portfolio quality reports
C2: Delinquent Loans by Loan Officer
C4: Summarized Aging of Portfolio at Risk by Loan Officer
C7: Loan Write-off and Recuperations Report
C8: Aging of Loans and Calculation of Reserve

Category D: Income statement reports
D1: Summary Income Statement
D2: Detailed Income Statement
D6: Detailed Actual-to-Budget Income Statement
D7: Adjusted Income Statement

Category E: Balance sheet reports
E1: Summary Balance Sheet
E2: Detailed Balance Sheet

Category F: Cash flow reports
F1: Cash Flow Review
F2: Projected Cash Flow

Category G: Summary operational reports
Summary Operations Report

BOX 3.5

Reports for clients

A1: Savings Account Activity
B1: Loan Repayment Schedule
B2: Loan Account Activity
B3: Comprehensive Client Status

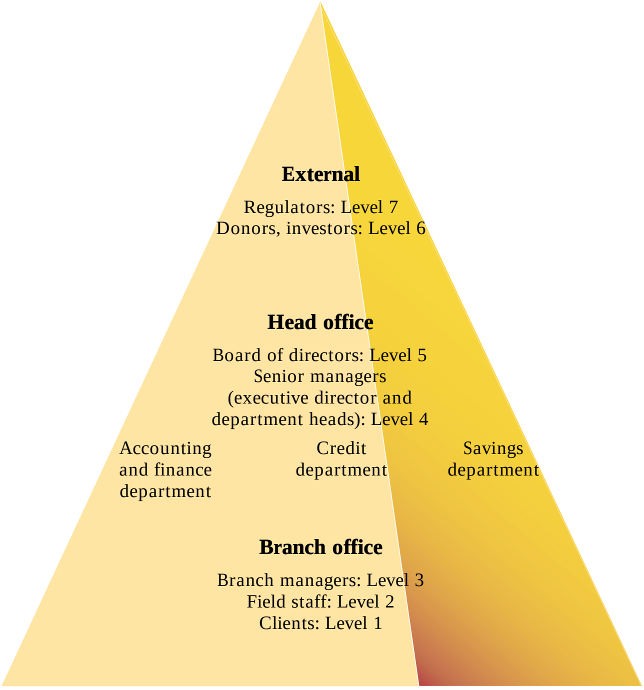
3.3.1 Reports for clients

Clients need to see information on their account activity. Primarily, they need information that would appear in a typical bank statement, listing the account's activity and current balances, so that they can confirm that the information is correct and understand how their account is being treated—for example, how their payment is divided among principal, interest, and other charges. Clients also need a clear repayment schedule showing the amount and timing of payments due.

The presentation of client reports should emphasize clarity, avoiding extraneous information and using common language where possible. For example, a loan activity statement should use *disbursements* and *payments* rather than *debits* and *credits*.

FIGURE 3.6

Reporting by user level


External
Regulators: Level 7
Donors, investors: Level 6
Head office
Board of directors: Level 5
Senior managers
(executive director and
department heads): Level 4
Accounting and finance department
Credit department
Savings department
Branch office
Branch managers: Level 3
Field staff: Level 2
Clients: Level 1

3.3.2 *Reports for field staff*

Field staff—especially loan officers—cannot do their jobs well without good, accurate information, presented punctually and in a useful form. For example, loan officers need the repayment status of loans as of the previous business day so that they can follow up immediately on overdue payments.

Whenever possible, reports for field staff should present information only for their caseload, so that staff do not have to sift through masses of information. And all the information they need for a specific part of their job should be presented in one concise report, such as the information a loan officer needs for client follow-up (name, phone number, amount overdue, next payment date). Report preparation should coincide with the field staff's work. For example, if they dedicate Tuesdays to following up on delinquent loans, the necessary report should be generated at the end of the day on Monday.

BOX 3.6

Reports for field staff

A1: Savings Account Activity
A2: Teller Savings Report
B1: Loan Repayment Schedule
B2: Loan Account Activity
B3: Comprehensive Client Status
B4: Group Membership Report
B5: Teller Loan Report
B6: Active Loans by Loan Officer
B7: Pending Clients by Loan Officer
B8: Daily Payments Report
C2: Delinquent Loans by Loan Officer
C4: Summary of Portfolio at Risk by Loan Officer
C9: Staff Incentive Report
Summary Report for Field Staff

Field staff need information on several levels. They need detailed information on clients and their accounts—such as that in B2: LOAN ACCOUNT ACTIVITY and B3: COMPREHENSIVE CLIENT STATUS—for loan approval or negotiations with a delinquent client, for example. They need overview reports showing all the accounts for which they are responsible—such as B6: ACTIVE LOANS BY LOAN

OFFICER—to plan their daily activities. They need to see how they are performing relative to other staff—through such reports as C4: SUMMARY OF PORTFOLIO AT RISK BY LOAN OFFICER and C9: STAFF INCENTIVE REPORT. And they need know how the institution is performing and how they are contributing—through a SUMMARY REPORT FOR FIELD STAFF.

It is important to ensure that field staff understand the information in the reports. Field staff make up the majority of a microfinance institution's staff, and their composition changes frequently as institutions expand and staff turn over. Reports should be clear and unambiguous. But even with excellent reports, staff will need training in their use.

BOX 3.7

Reports for branch and regional managers

A3: Active Savings Accounts by Branch and Product
A4: Dormant Savings Accounts by Branch and Product
A5: Upcoming Maturing Time Deposits
A6: Savings Concentration Report
B7: Pending Clients by Loan Officer
C1: Detailed Aging of Portfolio at Risk by Branch
C2: Delinquent Loans by Loan Officer
C3: Delinquent Loans by Branch and Product
C4: Summary of Portfolio at Risk by Loan Officer
C5: Summary of Portfolio at Risk by Branch and Product
C6: Detailed Delinquent Loan History by Branch
C7: Loan Write-off and Recuperations Report
C8: Aging of Loans and Calculation of Reserve
C9: Staff Incentive Report
D6: Detailed Actual-to-Budget Income Statement
Summary Report for Branch Manager

3.3.3 *Reports for branch and regional managers*

Branch managers need a full understanding of activities in their branch office, but should not be overwhelmed by details. They do need to stay informed about delinquency problems—for specific loans, for each loan officer, and for the branch. So they review detailed reports on delinquent loans (such as C2: DELINQUENT LOANS BY LOAN OFFICER) in addition to comparative reports on the loan officers in their branch (such as C4: SUMMARY OF PORTFOLIO AT RISK BY LOAN OFFICER).

The list of reports for managers in box 3.7 assumes a small to medium-size branch whose manager is responsible for the loan portfolio and savings activity. If there are middle management staff to assume these responsibilities, the reporting might be divided up accordingly. Regional managers, responsible for several branches, have no need for information on specific accounts and would receive a subset of the reports.

Branch managers are often responsible for the overall financial performance of their branch. Thus they need branch-level financial statements in addition to the savings and loan portfolio reports used by field staff.

BOX 3.8

Reports for senior managers in the head office

A6: Savings Concentration Report
B9: Portfolio Concentration Report
C3: Delinquent Loans by Branch and Product
C5: Summary of Portfolio at Risk by Branch and Product
C7: Loan Write-off and Recuperations Report
C8: Aging of Loans and Calculation of Reserve
D2: Detailed Income Statement
D3: Income Statement by Branch and Region
D4: Income Statement by Program
D6: Detailed Actual-to-Budget Income Statement
D7: Adjusted Income Statement
E2: Detailed Balance Sheet
E3: Program Format Balance Sheet
F1: Cash Flow Review
F2: Projected Cash Flow
F3: Gap Report
Summary Report for Senior Management

3.3.4 *Reports for senior managers in the head office*

Senior managers, responsible for a tremendous amount of activity, can easily be overwhelmed by information unless it is carefully selected and synthesized. They need to focus on aggregate information and general trends, delegating responsibility for details to the institution's middle managers.

Even when senior managers avoid detail, they can still receive far too much information. Thus functions generally need to be split among senior managers, so that the chief accountant focuses on financial statements, the credit department head on portfolio reports, and the savings department head on savings reports. The executive director needs an understanding of the key issues in each area but can rely on the senior management team for analysis and recommendations.

3.3.5 Reports for the board

Directors should regularly receive a concise, one- to two-page report providing the most essential information about the institution. Annexes can provide more detail for those interested. Directors should also receive a SUMMARY ACTUAL-TO-BUDGET INCOME STATEMENT, a SUMMARY BALANCE SHEET, and a quarterly CASH FLOW REVIEW.

BOX 3.9
Reports for the board

D5: Summary Actual-to-Budget Income Statement
D7: Adjusted Income Statement
E1: Summary Balance Sheet
F1: Cash Flow Review
Summary Report for Board

3.3.6 Reports for donors and shareholders

Of all the user groups, donors and shareholders are most interested in institutionwide information, and their need for information is the least frequent—typically quarterly. They need to know whether the institution is on track and whether they should be alerted to any problems.

Many donors require specialized reports with specifically defined information. Requirements for alternative definitions or for information not tracked by the MIS can mean intensive efforts to manually rework information. Thus every effort should be made to negotiate the substitution of regularly produced management reports for specialized donor reports.

BOX 3.10
Reports for donors and shareholders

D1: Summary Income Statement
E1: Summary Balance Sheet
Summary Report for Shareholders and Donors

3.3.7 Reports for regulators

Microfinance institutions regulated by an external body need to generate reports for these regulators, which specify precise formats and definitions for report preparation. Since these reporting standards vary widely among countries, no sample reports for regulators are included in the pamphlet.

Note

1. Statistics for life of project are commonly included in nongovernmental organizations' reports to show accumulated activity since services were initiated. Their inclusion often indicates a short-term mentality, and the numbers often become meaningless after

about three years. If they are incorporated into reports, care must be taken to ensure that any new system can readily quantify the activity that occurred before the system was established.

CHAPTER 4

Tracking Performance through Indicators

The primary purpose of an MIS is to produce information that management can use for decisionmaking. The most concise way to present such information is in the form of indicators. This chapter presents a selection of the most important indicators for a microfinance institution, explains how to calculate them, and provides basic guidance on interpreting them. The intent is to facilitate clear communication between managers—about how they wish to track information—and systems developers, whose task it is to create the systems to generate that information.

No discussion of management information systems for microfinance institutions is complete without a thorough treatment of financial and management indicators. An MIS is created to generate information for decisionmaking, and the best information for that purpose is generally that in the concise form of a financial or management indicator.

Conceptual frameworks for defining and interpreting financial information abound. Nearly every recommended list of indicators for microfinance institutions groups those indicators in a comprehensive framework designed to meet the needs of the intended users. The indicators in this chapter are oriented toward the needs of managers. They are divided into six broad groups (table 4.1), but this grouping should not be interpreted as an effort to develop a new comprehensive framework; the indicators can be organized in any common framework.

Only a few of the indicators are considered by CGAP as key for both managers of microfinance institutions and such external users as donors, investors, and regulators. The other indicators are certainly worth tracking but are less critical. The list is by no means comprehensive. Most microfinance institutions will choose to track additional indicators. Which indicators should be chosen often depends on the institution's characteristics—such as its financing sources, institutional structure, lending methodology, and range of services (table 4.1 identifies the main characteristic that makes using an indicator appropriate).

A serious problem in microfinance is the lack of standard definitions. Regulated institutions normally generate precisely defined indicators, sometimes using a standard chart of accounts. But the international microfinance community still does not have standard methods for calculating even the most important indicators, despite progress in the past several years. This chapter therefore presents definitions of indicators, based primarily on the emerging consensus, in the hopes of contributing to standardization in microfinance. Even more challeng-

This chapter presents definitions of indicators, based primarily on the emerging consensus, in the hopes of contributing to standardization in microfinance

TABLE 4.1

Suggested financial and management indicators for tracking

Group/indicator	Key	Characteristic that makes use appropriate	Section
Portfolio quality indicators			
Portfolio at risk, two or more payments	✓		4.2.2
Loan loss reserve ratio	✓		4.2.3
Loan write-off ratio	✓		4.2.3
Loan rescheduling ratio		Allowing frequent rescheduling	4.2.4
Profitability indicators			
Adjusted return on assets	✓		4.3.1
Adjusted return on equity		Seeking outside equity investors	4.3.1
Return on assets			4.3.2
Return on equity		Seeking outside equity investors	4.3.2
Financial sustainability			4.3.3
Financial solvency indicators			
Equity multiplier		Having debt	4.4.1
Quick ratio		Having voluntary savings	4.4.2
Gap ratio		Having short-term debt	4.4.3
Net interest margin		Having debt	4.4.3
Currency gap ratio		Having debt in foreign currency	4.4.4
Currency gap risk		Having debt in foreign currency	4.4.4
Real effective interest rate		Providing long-term loans in unstable economies	4.4.5
Growth indicators			
Annual growth in portfolio	✓		4.5
Annual growth in borrowers	✓		4.5
Annual growth in savings		Having savings	4.5
Annual growth in depositors		Having savings	4.5
Outreach indicators			
Number of active clients	✓		4.6.1
Percentage of female clients		Focusing on gender issues	4.6.1
Number of active savers		Having savings	4.6.2
Value of all savings accounts		Having savings	4.6.2
Median savings account balance		Having savings	4.6.2
Number of active borrowers		Having voluntary savings	4.6.3
Value of net outstanding loan portfolio	✓		4.6.3
Dropout rate	✓		4.6.3
Median size of first loans		Concerned about target group shift	4.6.3
Median outstanding loan balance	✓		4.6.3
Percentage of loans to targeted group		Focusing services on a certain sector or clientele	4.6.3

TABLE 4.1 (continued)

Suggested financial and management indicators for tracking

Group/indicator	Key	Characteristic that makes use appropriate	Section
Productivity indicators			
Active borrowers per loan officer	✓		4.7.1
Active borrower groups per loan officer		Using group lending methodologies	4.7.1
Net loan portfolio per loan officer	✓		4.7.1
Active clients per branch		Having branch operations	4.7.1
Net loan portfolio per branch		Having branch operations	4.7.1
Savings per branch		Having savings and branch operations	4.7.1
Yield gap	✓		4.7.2
Yield on performing assets		Having smooth funding sources[a]	4.7.2
Yield on portfolio	✓		4.7.2
Loan officers as a percentage of staff			4.7.3
Operating cost ratio	✓		4.7.3
Average cost of debt		Having short-term debt	4.7.3
Average group size		Having group lending methodologies	4.7.3
Head office overhead share		Having branch operations	4.7.3

a. The term *smooth* implies that the institution does not receive large, infrequent disbursements from donors, a funding pattern that causes YIELD ON PERFORMING ASSETS to fluctuate significantly.

ing than standardizing the definitions of indicators is establishing optimal ranges for their values that reflect best practice. For reasons explained in section 4.1.3, this handbook makes no attempt to establish such ranges.

4.1 Interpreting indicators

This chapter presents a basic overview of the financial indicators in table 4.1—the necessary background for designing and implementing an MIS that produces those indicators. But because this volume is not intended to be a financial management handbook, the chapter provides limited information on interpreting the indicators and using them in decisionmaking. The growing financial management literature targeted to microfinance gives valuable guidance in this area (see annex 3).

An important thing to remember in using indicators, however, is that numbers don't tell everything about an institution. Indicators need to be complemented by discussions with staff and clients, with close attention to morale and perceptions.[1]

4.1.1 Understanding the composition of indicators

Interpreting financial ratios can be challenging. It requires a solid grasp of the underlying financial principles and in-depth knowledge of the institution's operations and environment. To avoid misinterpretations, no indicator should be evaluated in isolation from others. For example, an evaluation of PORTFOLIO AT RISK should always include the LOAN WRITE-OFF RATIO and the LOAN RESCHEDULING RATIO.

Indicators generally compare two or more pieces of data, resulting in a ratio that provides more insight than do individual data points. The data for an indicator are usually selected because they have a causal link, and the resulting number, often a percentage, can be judged relatively independent of such factors as changes in scale of activity. For example, comparing salaries as a percentage of total expenditure from one year to the next can be more informative than simply comparing total salary expenditure for each year.

To avoid misinterpretations, no indicator should be evaluated in isolation from others

The selection of the denominator for a ratio can be extremely important.[2] Many of the financial indicators in this chapter measure an institution's financial efficiency. One of the most useful ways of doing this is to compare the relationship between income and costs with the assets being used by the institution. Income and costs are readily obtained from the financial statements. But there are different measures for the assets used by the institution, the two most common being average total assets and average performing assets.

Average performing assets is generally the more appropriate denominator for measuring financial productivity, particularly for an institution using only part of its assets to support its credit program (such as a multipurpose institution operating several types of programs). A typical balance sheet should include only cash, interest-bearing deposits, net loans outstanding, and long-term investments as performing assets.[3] The average is calculated by totaling those assets at the beginning of the year and at the end of each month, and dividing the total by 13.[4]

4.1.2 Trend analysis

Looking at trends in indicators—dynamic analysis—can often be more illuminating than examining their absolute values—static analysis. It is more helpful to know, for example, that the share of portfolio at risk for more than 90 days dropped from 9 percent last month to 7 percent this month than to know that it is now 7 percent. Static analysis can also lead to misinterpretation of brief aberrations and seasonal fluctuations. For example, if repayment typically slips slightly in December, this can be more accurately interpreted in dynamic analysis. An institution can incorporate dynamic analysis in its reports or even more effectively in a regularly produced series of graphs (see section 3.2).

4.1.3 Institutional comparison

Ratio analysis can be a useful way to compare and evaluate the performance of institutions. Managers can learn a great deal by comparing indicators for their institution with those for similar institutions, particularly institutions exemplifying best practice. External stakeholders, such as regulators and donors, can use ratio analysis to monitor performance and spot problems.

But ratio analysis must be done responsibly, taking into consideration the many factors in an institution's circumstances and methodology that can influence its financial ratios. This is particularly important in comparing institutions—whether institutions in the same country or (much more problematic) in different countries.

There is justifiable concern that adopting standard reporting definitions in the microfinance community could lead some donors to focus too much on these ratios, approving proposals only for institutions that have achieved the "best" performance. At this relatively early stage in our understanding of the internal dynamics of microfinance institutions, that would be a misuse of financial ratios. Following are some of the factors that affect these ratios:

Ratio analysis must be done responsibly, taking into consideration the many factors that can influence financial ratios

- *Size.* Large institutions have economies of scale that should reduce their cost ratios.
- *Maturity.* A well-established institution should perform more efficiently than a new one.
- *Growth rate.* Compared with other institutions, those growing rapidly tend to be less efficient and profitable as they absorb the growth. They typically have greater underutilized capacity (for example, new branch offices that have not yet reached capacity) and a higher percentage of their portfolio tied up in smaller and less profitable initial loans.[5]
- *Loan portfolio turnover.* Short-term loans may be more expensive for an institution because they have to be made more often to keep the same amount of funds in the portfolio.
- *Average loan size.* Making 10 loans of $100 is more costly than making one loan for $1,000.
- *Frequency of repayment.* Small regular repayments are more costly to process than fewer large repayments.
- *Geographical coverage.* High-density urban areas are less costly to cover than are sparsely populated rural areas.
- *Services offered.* For multipurpose institutions (which offer non-business-related services, such as nutrition, health, and community services) and integrated programs (which offer, in addition to financial services, such business-related services as marketing and management or technical training), the costs of financial and nonfinancial services should be separated when calculating financial ratios. But this is not always possible to do accurately.
- *Inflation and exchange rates.* International comparisons are complicated by differences in inflation rates, cross-currency exchange rates, and relative purchasing power.

For these reasons this handbook makes no attempt to establish acceptable ranges for indicators. Instead, it indicates only the preferred direction of change, to help managers determine, through trend analysis, whether their institutions are moving in the right direction.[6]

4.2 Portfolio quality indicators

Portfolio quality indicators come first in the list, and their treatment here is quite detailed because of their importance to microfinance institutions. In interviews performed during the preparation of this handbook, virtually all managers questioned about the indicators they deemed most important ranked a portfolio quality indicator at the top. Microfinance institutions are usually credit-driven. They may mobilize savings, but they often do so in order to have the resources to make loans. The loan portfolio is by far the largest asset managed by an institution—and if it is not managed well, unrecovered loans may well become an institution's largest expense. Good portfolio management is what generally distinguishes solid, sustainable institutions from those suffering serious problems.

The need to generate portfolio quality indicators regularly has been perhaps the strongest incentive for developing well-functioning, automated management information systems

Bad portfolio quality saps the energy of an institution. Staff attention is diverted to loan recovery. Costs escalate with the additional effort, while income begins to fall as a result of missed interest payments. Clients begin to see the institution not as providing services to the community, but as focusing on the unpleasant task of loan recovery. Good clients lose access to responsive services and larger follow-up loans as the institution undergoes a liquidity crunch. Staff morale begins to plummet. Donor and investor confidence begins to fade. Depositors withdraw their savings, worsening the liquidity crisis. If the institution is supervised, regulators may intervene and close down operations.

Portfolio quality can change virtually overnight. A healthy institution can suddenly suffer serious repayment problems—perhaps as a result of a political or economic crisis or of a natural disaster affecting a large number of its clients. In addition, repayment depends on perceptions and attitudes. Clients tend to look for signals from the institution on how serious it is about timely loan repayment. The wrong signals can send messages that spread rapidly among the clientele—thus the importance of closely monitoring repayment performance.[7]

Management needs to focus on portfolio quality from the beginning of credit operations; it is a mistake to expand first and then concentrate on portfolio quality. The systems and procedures to monitor portfolio quality must be in place to ensure that it does not begin to deteriorate without swift action by the institution.

4.2.1 The challenges of monitoring portfolio quality

The challenge of monitoring portfolio quality has often been twofold: determining what indicator or indicators to use and establishing systems that generate those indicators in an accurate and timely fashion (box 4.1). This need to generate portfolio quality indicators regularly has been perhaps the strongest incentive for developing well-functioning, automated management information systems.

BOX 4.1

Tracking portfolio quality at BRAC

Until 1992 BRAC used a loan monitoring system that classified loans in three general categories: *current*, for loans still within the original 52-week maturity; *late*, for loans that had matured but were restructured; and *overdue*, for loans that remained outstanding past the rescheduled maturity date. Because of the many natural disasters and seasonal disruptions in Bangladesh, BRAC knew that members might fall a few payments behind. It assumed that they resumed paying as quickly as possible. But the monitoring system was too general to allow BRAC to track individual loans from the head office. Loans crossed into another category only after reaching maturity. With external assistance, BRAC developed new tools to track its portfolio.

The most valuable new indicator, AGING OF PORTFOLIO AT RISK, allows BRAC to classify loan principal outstanding by the number of payments missed and therefore to identify repayment trends and patterns from month to month. This measure answers the questions, How much of the portfolio is at risk, and where is the risk concentrated?

BRAC found that only 32 percent of loans outstanding had no missed payments (a much lower percentage than expected), that delinquency rates were much higher for some sectors than for others, and that the likelihood that past-due loans would be repaid fell dramatically as the number of missed payments increased.

Armed with this new information, BRAC took immediate steps to emphasize loan repayment among field staff, to strengthen loan collection procedures, and to restructure the loans to problem sectors by reducing weekly payments. It also improved technical assistance in these sectors. By June 1995, 87 percent of loans outstanding had no missed payments.

Accurate interpretation of portfolio quality requires comparing several indicators to ensure a complete picture

In the 1980s most institutions used customized indicators of quality based on a repayment rate (for example, the percentage of scheduled payments received last month) or on an aging of the portfolio by the amount of payments in arrears—and for lack of systems, this aging was often done only once a year. Ideally, however, an indicator for monitoring the loan portfolio should satisfy the following three requirements:[8]

- *Sensitive.* The indicator must detect even small changes in the quality of the loan portfolio.
- *Consistent.* The indicator should move consistent with changes in portfolio quality. That is, when portfolio quality deteriorates, the indicator should always move in the direction indicating a worsening portfolio.
- *Prudent.* The indicator must identify the amounts that may reasonably be considered at risk of being lost.

A major turning point in monitoring portfolio quality occurred with the 1991 publication of the ACCION monograph *The Hidden Beast: Delinquency in Microenterprise Credit Programs*.[9] The monograph recommended using the PORTFOLIO AT RISK measure, a recommendation soon widely adopted by stronger microfinance institutions.

In most instances PORTFOLIO AT RISK satisfies the three criteria, but like all financial indicators it should not be examined in isolation. Accurate interpretation of portfolio quality requires comparing several indicators to ensure a complete picture. For example, an institution that pursues an aggressive write-off policy, moving loans off the books after, say, 30 days' delinquency, will probably appear to have a healthy portfolio as measured by portfolio at risk. But when portfolio at risk and the loan write-off ratio are examined together, a more accurate assessment of the situation emerges. Rescheduling delinquent loans can have the same distortionary effect.

The following sections describe frequently advocated portfolio quality indicators. For report formats that draw out this portfolio information in a useful and concise way see the section in the pamphlet on loan portfolio reports.

4.2.2 Portfolio at risk

For most loan products a portfolio at risk indicator aged by periods reflecting the frequency of repayment—such as 1–7 or 8–14 days for loans with weekly repayments and 1–30 or 31–60 days for loans with monthly repayments—satisfies the three criteria and should be used as the primary indicator by program staff. For internal management the most appropriate indicator is the percentage of the portfolio that is delinquent by two or more payments—portfolio at risk more than 7 days for loan products with weekly payments and portfolio at risk more than 30 days for loan products with monthly payments. If a mix of repayment frequencies is used, the 30-day cutoff is more suitable. Many financial management guides recommend using a 90-day cutoff for external reporting, because the result is generally more representative of long-term loss rates.[10] The longer period is also more apt for comparing microfinance institutions that differ in their use of short- and medium-term loans.

For rescheduled loans portfolio at risk needs to be assessed separately and interpreted with more caution than for the standard portfolio. These loans, having fallen seriously behind schedule once before, are at much greater risk than the overall portfolio.

Portfolio at risk, two or more payments

$$\frac{\text{Total outstanding balance of loans more than two payments overdue}}{\text{Total outstanding loan portfolio}}$$

For ASPIRE …

Portfolio at risk more than 30 days is calculated as follows:

$$\frac{60{,}570}{910{,}000} = 6.7\%$$

Data are from report C5.

The method of calculating portfolio at risk is described in the text accompanying report C1: Detailed Aging of Portfolio at Risk by Branch (see the pamphlet). The details of the calculation make it apparent that in some instances portfolio at risk may not be the most useful indicator, most notably for village banking lending.

Some microfinance institutions using this lending methodology allow village banks to make partial payments. If a bank makes a payment for 33 of its 35 members, the portfolio at risk indicator would consider the entire loan at risk, even though 33 clients are paying well. If complete information were available, the outstanding balance of the two delinquent clients alone could be considered at risk, but most village banking methodologies do not provide this much detail.

For village banking, therefore, a more appropriate measure of portfolio quality is CURRENT REPAYMENT RATE, which divides payments received during the period by payments that fell due during the period under the original loan contract. Prepayments and late payments distort this indicator in the short term, so it should be interpreted over long periods—for example, using a six-month moving average. CURRENT REPAYMENT RATE is affected little by accounting policies (such as write-off policies and accrual of unpaid interest income) and loan refinancing or rescheduling.

The indicator PORTFOLIO IN ARREARS was commonly used to evaluate portfolio quality before PORTFOLIO AT RISK became more widely accepted. PORTFOLIO IN ARREARS considers only the overdue payment rather than the entire loan balance. For example, if a loan with a balance of $1,000 has a single payment of $100 overdue, PORTFOLIO AT RISK would consider the entire $1,000 at risk, while PORTFOLIO IN ARREARS is concerned only with the $100 that is overdue. The calculation of arrears would be the same whether the outstanding loan is $200 or $1,000, even though most would agree that the $1,000 loan gives more cause for concern. PORTFOLIO IN ARREARS should never be used, because it offers no benefit over other portfolio indicators that is not vastly outweighed by the probability that it will underestimate repayment problems.

4.2.3 Loan loss reserve ratio and loan write-off ratio

All microfinance institutions should establish realistic loan loss reserves to accurately show both the size of their portfolio and their true expenses (since loan default is a cost of doing business). Reserve analysis should be done regularly—monthly if systems allow easy calculation. There are a wide variety of techniques for determining adequate provisions.[11] This handbook discusses only the most basic: provisioning for ever-greater percentages as the aging of the loan increases.

Report C8: AGING OF LOANS AND CALCULATION OF RESERVE summarizes information on portfolio at risk, and its two right-hand columns establish an appropriate reserve based on that information. The reserve is calculated by multiplying the balance at risk in each aging category by a percentage reflecting the probability of loan loss. Such percentages are often established by regulatory bodies. Those used here reflect common practice, but should not be used without consulting local practice. If local regulation does not specify what percentage of each group of aged overdue loans to provision, an institution should work toward a range of percentages based on the experience of a historical cohort of loans, using a standard scheme such as 10, 25, 50, and 100 percent in the meantime.

Figure 4.1 shows how the loan loss reserve needs to be adjusted each period. The reserve at the beginning of the period is found in the balance sheet—25,000 in this example. From this must be subtracted loans written off during the period, which total 22,000. The loan loss reserve at the end of the period should match the amount reported in the balance sheet (report E1), which is 34,200. So new provisions of 31,200 must be allocated to the reserve.

FIGURE 4.1

Loan loss provision analysis

Period under analysis: 1 January 1996 to 31 December 1996

	Amount	Portfolio	As a percentage of portfolio	Indicator
1 Loan loss reserve, beginning of period	25,000	654,000	3.8	Reserve ratio
2 Loans written off during period	(22,000)	782,000	2.8	Loan write-off ratio
3 New provisions allocated during period	31,200			
4 Loan loss reserve, end of period	34,200	910,000	3.8	Reserve ratio

These new provisions are established by crediting the loan loss reserve account (account 1310 in the sample chart of accounts in chapter 2) and debiting the loan loss provision expense account (account 5110). Thus the new provisions show up as an expense in the period when the adjustment is made. When a loan is actually written off, it does not show up as an expense—having been expensed at the time of provisioning—but simply as a reduction in the contra-asset loan loss reserve account (1310) to match the reduction in the loan portfolio receivable account (1210).

LOAN LOSS RESERVE RATIO

$$\frac{\text{Loan loss reserve}}{\text{Gross outstanding portfolio}}$$

LOAN WRITE-OFF RATIO

$$\frac{\text{Loans written off during period}}{\text{Average gross outstanding portfolio during period}}$$

Loan loss provision analysis involves two important indicators. The LOAN LOSS RESERVE RATIO is calculated as the amount in the loan loss reserve (account 1310) divided by the gross outstanding portfolio (account 1200). The LOAN WRITE-OFF RATIO is the loan principal written off during the period divided by the average gross outstanding portfolio during the period (account 1200)—782,000 in the example, the average of the initial and the ending portfolios.[12]

Generally, over the long term the LOAN WRITE-OFF RATIO should be close to the LOAN LOSS RESERVE RATIO. Any significant difference would indicate changing repayment performance or inappropriate provisioning policies.

4.2.4 Loan rescheduling ratio

Many microfinance institutions discourage or forbid frequent loan rescheduling. But when rescheduling is used, the rescheduled loans should be tracked separate from the rest of the loan portfolio because of the higher risk associated with them (see account 1240 in the sample chart of accounts). One tool for doing so is the LOAN RESCHEDULING RATIO, which compares the rescheduled portfolio with the total outstanding loan portfolio. A sudden drop in PORTFOLIO AT RISK might be explained by an increase in this ratio.

LOAN RESCHEDULING RATIO

$$\frac{\text{Gross outstanding balance of rescheduled loans}}{\text{Gross outstanding portfolio}}$$

4.3 Profitability indicators

Basic financial statement indicators, such as net income, hint at an institution's level of profitability. But they do not take into consideration whether income is donated or earned, whether loans received by the institution are priced competitively or subsidized, or whether the institution receives in-kind support. A truly accurate assessment of an institution's sustainability must anticipate the future, when this external support may end. The three main profitability indicators explained in this section—adjusted return on assets, adjusted return on equity, and financial sustainability—are therefore based on financial statements that have been adjusted to offset the effect of external subsidies.

A truly accurate assessment of an institution's sustainability must anticipate the future, when external support may end

4.3.1 Adjusted return on assets and on equity

All basic business courses teach that the ultimate goal of commercial businesses—including commercial banks—is to maximize shareholders' wealth by maximizing profit. The principal means of quantifying this performance is through return on equity, which measures profit (or net income) relative to the equity in the institution (the amount invested by shareholders). Table 4.2 presents an equation showing the relationship of return on equity to four other commonly used indicators.[13]

The profit margin shows the surplus income (or deficit) generated by the institution in relation to its total income. This surplus, or net, income is usually the difference between total adjusted income and total adjusted expenses. (The concept of adjusted income is explained in the discussion of report D7 in the pamphlet.) Asset utilization, sometimes referred to as the institution's yield, relates income to total assets.

When the profit margin and asset utilization are multiplied, the total income in the denominator of the profit margin cancels out with the total income in the numerator of asset utilization. The result is net adjusted income over total assets—or adjusted return on assets. In the example the return is negative, indicating that the institution would be losing money if it depended fully on commercial financing.

Table 4.2

The relationship of return on equity to four other commonly used indicators

Profit margin	X	Asset utilization	=	Adjusted return on assets	X	Equity multiplier	=	Adjusted return on equity
$\frac{\text{Net adj. income}}{\text{Total adj. income}}$		$\frac{\text{Total adj. income}}{\text{Avg. total assets}}$		$\frac{\text{Net adj. income}}{\text{Avg. total assets}}$		$\frac{\text{Avg. total assets}}{\text{Avg. total equity}}$		$\frac{\text{Net adj. income}}{\text{Avg. total equity}}$
For ASPIRE the indicators are calculated as follows (data are from report D7):								
$\frac{(51{,}247)}{412{,}140}$		$\frac{412{,}140}{827{,}576}$		$\frac{(51{,}247)}{827{,}576}$		$\frac{827{,}576}{193{,}424}$		$\frac{(51{,}247)}{193{,}424}$
–12.4%	X	49.8%	=	–6.2%	X	4.28	=	–26.5%

Adjusted return on assets

$$\frac{\text{Net adjusted income from financial services}}{\text{Average total assets}}$$

Adjusted return on equity

$$\frac{\text{Net adjusted income from financial services}}{\text{Average total equity}}$$

The equity multiplier represents the institution's leverage. If the institution has no debt, the equity multiplier would be 1.0. But if the institution can attract savings, commercial loans, soft loans, and other forms of debt, as in the example, it can leverage its equity base and increase its scale of activity. When adjusted return on assets is multiplied by the equity multiplier, total assets cancels out of the numerator and denominator, leaving net adjusted income over total equity, or adjusted return on equity.

Adjusted return on assets and adjusted return on equity compare net adjusted income (or profit) with the institution's assets or the shareholders' investment. The greater the leveraging in a profitable institution, the larger the difference between the two returns.[14]

Traditional financial institutions and businesses emphasize return on equity for comparing performance. Comparisons based on this indicator assume that the institutions considered operate on equal footing, have similar institutional, ownership, and capital structures, and are all motivated by profit. These assumptions are reasonably correct for, say, U.S. commercial banks.[15] But return on equity makes little sense for comparing microfinance institutions, which have widely divergent liability and equity structures. Many have large equity bases built up through donor funds; others have little equity and are funded through soft loans. For these institutions return on assets is more appropriate. And because of the grants and subsidies that microfinance institutions still receive and the different economic environments in which they operate, it is advisable to first make adjustments to the financial statements before calculating return on assets, a process known as adjusted return on assets analysis.[16]

Report D7 incorporates the adjusted return on assets approach into the income statement format, dividing adjusted amounts by the average total assets for the year. (To provide an alternative analytical approach, it also divides the adjusted amounts by the average outstanding portfolio.) The figure for adjusted return on assets is –6.2 percent, which appears on the line *adjusted return from financial services operations.* The supporting calculations appear in the analysis box below the income statement.

Return on assets

$$\frac{\text{Net income from financial services}}{\text{Average total assets}}$$

Return on equity

$$\frac{\text{Net income from financial services}}{\text{Average total equity}}$$

4.3.2 Return on assets and on equity

Although adjusted indicators for return on assets and on equity are important for getting a true, long-term perspective on a microfinance institution's financial viability, it is also useful to track the nominal (unadjusted) values of these returns. Because these nominal returns are standard business measures, they are generally requested by banks and investors not accustomed to negotiating with microfinance institutions.

For ASPIRE ...

The RETURN ON ASSETS is calculated as follows:

$$\frac{52{,}640}{827{,}576} = 6.4\%$$

The RETURN ON EQUITY is calculated as follows:

$$\frac{52{,}640}{193{,}424} = 27.2\%$$

Data come from reports D1 and E1.

4.3.3 *Financial sustainability*

The most commonly discussed indicator for institutional sustainability is FINANCIAL SUSTAINABILITY. This is generally considered to be earned income (excluding grants) divided by operational and financial expenses, where financial expenses include some cost associated with inflation.[17] The definition proposed here—total adjusted financial income divided by total adjusted financial services expenses—follows the guidelines for adjusting income and expenses presented in the discussion of report D7 (see the pamphlet). The indicator is quite similar to PROFIT MARGIN.

FINANCIAL SUSTAINABILITY

$$\frac{\text{Total adjusted financial income}}{\text{Total adjusted financial expenses}}$$

For ASPIRE ...

FINANCIAL SUSTAINABILITY is calculated as follows:

$$\frac{412{,}140}{463{,}387} = 89\%$$

Data come from report D7.

4.4 Financial solvency indicators

This section describes indicators related to institutions' safety and soundness. The relevance for an institution of nearly all these indicators depends to some degree on the composition of its balance sheet, including the kind of debt, if any, that it has.

4.4.1 *Equity multiplier*

The EQUITY MULTIPLIER is an indicator of leverage—how extensively the institution is using its equity to expand its available resources by increasing its liabilities. The measure indicates the institution's capability of covering potential losses in assets. For example, if the institution cannot collect a large share of its outstanding loans, does it have enough equity to cover these losses? If not, it will be unable to honor its liabilities, such as the savings of clients and the loans from donors or development banks, and would be technically bankrupt. To protect the interests of these external parties, regulators closely monitor the EQUITY MULTIPLIER (and the closely related CAPITAL ADEQUACY indicator).

EQUITY MULTIPLIER

$$\frac{\text{Total assets}}{\text{Total equity}}$$

For ASPIRE ...

The EQUITY MULTIPLIER is calculated as follows:

$$\frac{1{,}000{,}800}{251{,}640} = 4.3$$

Data come from report E1.

4.4.2 *Liquidity risk indicators*

Liquidity risk—relating to whether an institution has sufficient liquid resources to honor its liabilities—is an important concern for a well-managed financial institution. But of all the topics addressed in this chapter, it also lends itself least to analysis by a straightforward indicator. Liquidity is best managed by cash flow projections, which can be of varying sophistication, depending on the institution's needs and complexity (for guidance on preparing such projections see the section in the pamphlet on cash flow reports).

A microfinance institution needs to avoid excesses and shortfalls in its liquidity. Too much liquidity means that the institution is not using its resources wisely, since institutions normally earn higher returns on loans and long-term investments than on cash and cash equivalents. But too little liquidity may mean that the institution will be unable to honor its commitments. A microfinance institution needs liquidity to pay expenses, disburse new loans, make payments on any loans that it has, and honor withdrawal requests from clients with savings or time deposits.

Given the circumstances under which most microfinance institutions operate, managers should generally err on the side of conservative liquidity management, maintaining greater liquidity than a commercial bank would. While commercial banks can readily suspend lending when liquidity shortfalls occur, microfinance institutions should avoid this because of the danger it poses for clients' motivation to repay loans. Institutions that depend on donor funding, the timing of which can be unpredictable, should calculate liquidity margins with a good deal of cushion.[18]

QUICK RATIO

$$\frac{\text{Liquid assets}}{\text{Current liabilities}}$$

For ASPIRE ...

The QUICK RATIO is calculated as follows:

$$\frac{42{,}000}{88{,}000} = 48\%$$

Data come from report E1.

The liquidity indicator most appropriate for an institution depends much on its type. If the institution mobilizes voluntary passbook savings, it will need to ensure adequate liquidity to meet client requests for withdrawals, using an indicator such as the QUICK RATIO. If it holds most savings in the form of collateral savings tied to loan balances, the QUICK RATIO is less important. Calculations of the QUICK RATIO should exclude from the denominator any liquid assets that are restricted donor funds, since they cannot be used to meet liabilities.

For institutions with a growing loan portfolio a LIQUIDITY ADEQUACY RATIO such as those proposed by Bartel and others and by Christen is more useful in planning than the QUICK RATIO.[19] LIQUIDITY ADEQUACY RATIOS estimate the institution's ability to meet projected expenses and demand for new loans over a period such as one month. To generate these indicators, it is necessary to first prepare an estimated cash flow projection and then distill the information into an indicator.

4.4.3 Interest rate risk indicators

When a microfinance institution uses short-term liabilities to fund longer-term loans, it is exposed to interest rate risk. Take for example an institution that uses short-term time deposits to fund 12-month loans. If the economic environment changes so that the institution must raise the rate it pays on time deposits to prevent depositors from withdrawing their funds and going elsewhere, its costs will increase while the interest earned on its loans will remain the same. Managers can minimize this risk by asset and liability matching—matching the terms of liabilities with the terms of the assets they fund. An institution with mismatched terms may need to reprice its liabilities, for example, raising the interest rate it pays on passbook savings. The interest rate it earns on its loans will remain frozen until the loans are repaid and the funds can be lent at a higher rate.

Gap ratio

The principal indicator of interest rate risk for microfinance institutions with substantial short-term debt is the GAP RATIO, which compares the values of assets and liabilities that will mature or can be repriced upward or downward during the period under analysis.

Gap analysis is a standard analytical technique used by commercial banks, but it has limited applicability in microfinance today and is a complex topic that is beyond the scope of this handbook.[20]

GAP RATIO

$$\frac{\text{Rate-sensitive assets}}{\text{Rate-sensitive liabilities}}$$

For ASPIRE …

The GAP RATIO is calculated as follows:

$$\frac{640{,}000}{78{,}000} = 8.2\%$$

Data come from report F3.

Net interest margin

A more basic but less precise indicator of interest rate risk is the NET INTEREST MARGIN, commonly called the spread. The NET INTEREST MARGIN calculates the income remaining to the institution after interest is paid on all liabilities and compares this with the total assets or the performing assets of the institution (see section 4.1.1 for a discussion of the choice of denominator). Tracking this indicator over time will reveal whether the spread is changing and whether the interest rate charged on loans or that paid on savings needs to be adjusted. Like many indicators, the NET INTEREST MARGIN is more appropriate for commercial banks, which are highly leveraged with debt demanding commercial interest rates, than for microfinance institutions. If a microfinance institution has a large equity base or subsidized loans, or if inflation is high or variable, this indicator would not provide helpful information. Nor would it be useful for comparing an institution with its peers.

NET INTEREST MARGIN

$$\frac{\text{Interest revenue} - \text{interest expense}}{\text{Average performing assets}}$$

For ASPIRE …

The NET INTEREST MARGIN is calculated as follows:

$$\frac{360{,}360 - 63{,}000}{784{,}650} = 37.9\%$$

Data come from reports D7 and E1.

4.4.4 Exchange risk indicators

Exchange risk occurs when the share of an institution's assets denominated in a foreign currency differs substantially from the share of its liabilities denominated in that currency. A microfinance institution in Latin America, for example, might have debt from international investors and development banks denominated in U.S. dollars. It converts those funds to local currency and lends them to its borrowers, at an interest rate set to cover expected devaluation of the local currency with respect to the foreign currency. But there is always a risk of a greater change in exchange rates that would devalue the assets in the loan portfolio, while the institution remains liable for the full debt. For this reason bank regulators normally look for careful currency matching.

CURRENCY GAP RATIO

$$\left(1-\frac{\text{Assets in specified currency}}{\text{Liabilities in specified currency}}\right)\text{X }100\%$$

For an institution …

… with a loan of 100,000 in a foreign currency, and with 50,000 in a bank account denominated in the same currency but the balance loaned out in local currency, the CURRENCY GAP RATIO would be calculated as follows:

$$\left(1-\frac{50{,}000}{100{,}000}\right)\text{X }100\% = 50\%$$

In this example only 50 percent of the liability is protected. The other 50 percent is exposed to exchange risk.

Data would come from report E2.

Currency gap ratio

A currency gap can be calculated in the same way as the interest rate gap. A multicurrency accounting system that provides for currency position accounts continuously monitors this currency gap by comparing assets and liabilities denominated in each currency used. The gap (or net difference) between the assets and the liabilities for a currency is carried in the position account.

CURRENCY GAP RISK

$$\frac{\text{Assets in specified currency} - \text{liabilities in specified currency}}{\text{Performing assets}}$$

For that same institution …

… with 500,000 of performing assets, the CURRENCY GAP RISK is calculated as follows:

$$\frac{50{,}000 - 100{,}000}{500{,}000} = -10\%$$

Data would come from report E2.

Currency gap risk

The CURRENCY GAP RISK indicator measures the institution's currency exposure relative to its performing assets. The CURRENCY GAP RATIO could indicate a high exposure if the institution has borrowed funds denominated in a hard currency that it lends out in local currency, but if the hard currency loan is small relative to the institution's performing assets, there is little cause for worry.

REAL EFFECTIVE INTEREST RATE

$$\left(\frac{1+\text{nominal effective interest rate}}{1+\text{inflation rate}}-1\right)\text{X }100\%$$

4.4.5 An inflation risk indicator—real effective interest rate

Microfinance institutions should always be aware of future trends in inflation and manage their assets and fee structures accordingly. If inflation is likely to increase, managers may have to raise interest rates or fees to maintain an adequate real effective interest rate—the difference between the nominal effective interest rate and the inflation rate. (Managers facing severe inflation may need to shorten loan terms, lend in more stable currencies, index loan values to some stable value, or even suspend lending temporarily.) The nominal effective interest rate is calculated by combining the nominal interest rate with commissions and fees charged to the client and determining what interest rate charged on a declining loan balance would generate an equivalent income stream for the institution.[21]

For ASPIRE …

The REAL EFFECTIVE INTEREST RATE is calculated as follows:

$$\left(\frac{1 + 0.48}{1 + 0.12} - 1\right) \text{X } 100\% = 32\%$$

Data come from reports D7 and E1.

4.5 Growth indicators

Most successful microfinance institutions undergo periods of substantial growth. This section presents four basic growth indicators that should be monitored regularly—monthly or quarterly—to ensure that an institution's growth does not exceed its capacity to administer its portfolio.

The indicators monitor growth in loan portfolio, borrowers, savings, and depositors. All four indicators are calculated as follows:

$$\text{Growth rate} = \frac{\begin{array}{c}\text{Amount at end of period} \\ -\text{ amount at beginning of period}\end{array}}{\text{Amount at beginning of period}} \text{ X } 100\%$$

Growth rates need to be identified by the period they cover, for example, annual or monthly. To ease interpretation, monthly or quarterly growth rates can be expressed in their annualized equivalents. The process for annualizing rates is as follows:

$$\text{Annual growth} = (1 + \text{period growth})^{(12/m)} - 1$$

where m is the number of months in the period. For example, a quarterly growth rate of 2 percent would be annualized as follows:

$$(1 + 0.02)^4 - 1 = 8.25\%.$$

For an institution with low growth rates and few compounding periods, a close approximation is simply the periodic growth rate times the number of periods in a year—for example, 2% X 4 quarters per year = 8%.

For ASPIRE …

The growth rates are calculated as follows:

ANNUAL GROWTH IN PORTFOLIO

$$\frac{910{,}000 - 654{,}000}{654{,}000} \text{ X } 100\% = 39\%$$

ANNUAL GROWTH IN BORROWERS

$$\frac{4{,}024 - 3{,}050}{3{,}050} \text{ X } 100\% = 32\%$$

ANNUAL GROWTH IN SAVINGS

$$\frac{60{,}000 - 45{,}000}{45{,}000} \text{ X } 100\% = 33\%$$

ANNUAL GROWTH IN DEPOSITORS

$$\frac{629 - 520}{520} \text{ X } 100\% = 21\%$$

Data come from reports A6, C5, and E1.

4.6 Outreach indicators

The concept of outreach addresses a fundamental difference between microfinance institutions and normal commercial finance institutions—most microfinance institutions are established to accomplish a mission that is partly or wholly socially motivated, not simply to maximize investors' return. Although these missions differ, most include extending financial services to the poor and excluded. This section presents indicators that attempt to measure success in accomplishing that goal. The indicators capture two aspects of outreach. Three of the indicators—NUMBER OF ACTIVE CLIENTS, VALUE OF NET OUTSTANDING LOAN PORTFOLIO, and VALUE OF ALL SAVINGS ACCOUNTS—relate to the breadth of outreach. The rest relate to the depth of outreach—how poor and disadvantaged the clients being reached are. The indicators are divided into three categories—client outreach, savings outreach, and loan outreach.

4.6.1 Client outreach

There are two client outreach indicators. The first, NUMBER OF ACTIVE CLIENTS, is simply the total number of clients receiving services. Care must be taken not to double count clients receiving two loans simultaneously or those with both savings and loan accounts. The second client outreach indicator, PERCENTAGE OF FEMALE CLIENTS, highlights gender issues. This indicator can sometimes be misleading. When loans to family-operated businesses are considered to be in the name of one spouse, even though both spouses may be required to sign the contract and both are actively engaged in the business, the statistic is distorted. And when loans to women are significantly smaller than loans to men—as when women receive loans for commerce and men receive loans for production—women may hold a far smaller share of the outstanding loan portfolio than suggested by their representation among clients. One way to monitor for such discrepancies in service is to generate each outreach indicator separately for men and women.

4.6.2 Savings outreach

NUMBER OF ACTIVE SAVERS needs to take into account clients with more than one savings account. Microfinance institutions with both voluntary and compulsory savings should monitor the number of savers in each category. The indicator VALUE OF ALL SAVINGS ACCOUNTS is simply a summation of all savings deposits, information easily extracted from the balance sheet. (When savings are held by a village group, however, the information does not appear in the institution's financial statements and other methods must be used to monitor this indicator.) Again, voluntary and compulsory savings can be differentiated. MEDIAN SAVINGS ACCOUNT BALANCE shows the savings of the typical client. Median values are more informative than averages for analyzing distributions that are highly skewed, as savings accounts tend to be. The median is calculated relatively easily in computerized systems, as the account balance at which 50 percent of accounts are larger and 50 percent smaller. In noncomputerized systems the average balance may be easier to calculate, by dividing VALUE OF ALL SAVINGS ACCOUNTS by NUMBER OF ACTIVE SAVERS.

4.6.3 Loan outreach

In calculating NUMBER OF ACTIVE BORROWERS, care needs to be taken not to double count clients with more than one active loan. The indicator VALUE OF NET OUTSTANDING LOAN PORTFOLIO is extracted from the balance sheet.

DROPOUT RATE is an important indicator, but one that few microfinance institutions monitor. It covers clients who stop receiving loans because they are dissatisfied with the institution's services, no longer need to borrow, have been rejected because of poor repayment performance, or have "graduated" from the institution, with borrowing needs that exceed what it can offer. The importance of monitoring this information lies in the need to build up a large, reliable client base. A high dropout rate means that an institution must bring in new clients, who are riskier to work with, take more staff time, and usually receive smaller loans. It also endangers the institution's ability to continue growing, as it may run out of solid clients. A high dropout rate usually indicates a problem with the institution's services and should be investigated.

DROPOUT RATE

$$1 - \frac{\text{Number of follow-up loans issued during period}}{\text{Number of loans paid off during period}}$$

The dropout rate formula does not rely on standard data from portfolio reports. The information needed to generate this indicator is available in the MIS, but it must be processed carefully. The numerator must include all loans other than initial loans to first-time clients.

Two indicators track median loan size. The first analyzes the MEDIAN SIZE OF FIRST LOANS (clients' first loans from the institution). Tracking this indicator helps to separate client characteristics from growth trends as repeat clients receive ever-larger loans—and thus to monitor the economic level of entry-level clients.[22] The second indicator, MEDIAN OUTSTANDING LOAN BALANCE, can be expected to gradually increase for repeat clients. This indicator uses outstanding balance rather than initial loan disbursement because it better represents the level of financial service being provided. It cannot be easily compared with the indicator MEDIAN SIZE OF FIRST LOANS.

PERCENTAGE OF LOANS TO TARGETED GROUP is a flexible indicator that an institution can use for one or more categories of targeted clientele:

- A microfinance institution that works in both urban and rural areas might monitor the percentage of loans disbursed in rural areas with poor access to financial services.
- A microfinance institution might monitor the percentage of loans under, say, $300, which could be considered targeted to needier clients.

PERCENTAGE OF LOANS TO TARGETED GROUP

$$\frac{\text{Amount of portfolio held by targeted group}}{\text{Total outstanding loan portfolio}}$$

4.7 Productivity indicators

Productivity indicators are generally of more interest to management than to external regulators. Making the best use of resources and providing services at least cost are important, but productivity has only indirect influence on the safety and soundness issues that concern regulators. The productivity indicators here are divided into three areas—operational productivity (the use of staff and office resources), financial productivity (the use of financial resources), and efficiency. The productivity indicators are all a ratio of some quantity of "output" to a unit of "input." The efficiency indicators analyze the internal use of resources.

4.7.1 Operational productivity indicators

Three operational productivity indicators look at loan officer productivity and three at branch office productivity.

Loan officers' productivity is best defined by caseload—the number of clients they are assisting—and portfolio—the amount of resources for which they are responsible. Caseload is best defined by the indicator ACTIVE BORROWERS PER LOAN OFFICER, which covers individuals with loan balances that have not been written off. An institution using peer lending should include all borrowers who will receive loans, even if it considers the funds lent to the group a single loan. To complement the borrower-based caseload, the institution should also monitor a second indicator, ACTIVE BORROWER GROUPS PER LOAN OFFICER. The third indicator, NET LOAN PORTFOLIO PER LOAN OFFICER, is a critical one because it is the loan officer's portfolio that generates a microfinance institution's income. The greater the portfolio for a given staff size, the more financially productive the institution.

Microfinance institutions with decentralized structures should also monitor the productivity of each branch office. The indicators for this are similar to those for loan officer productivity, but may have some key differences for institutions offering savings services as well as credit. ACTIVE CLIENTS PER BRANCH should consider all clients—savers and borrowers—while ensuring that clients with multiple accounts are not double counted. The NET LOAN PORTFOLIO PER BRANCH and SAVINGS PER BRANCH should also be monitored.

For ASPIRE ...

The productivity indicators are calculated as follows:

ACTIVE BORROWERS PER LOAN OFFICER

$$\frac{4{,}024}{13} = 310$$

ACTIVE BORROWER GROUPS PER LOAN OFFICER

$$\frac{900}{13} = 69$$

NET LOAN PORTFOLIO PER LOAN OFFICER

$$\frac{875{,}800}{13} = 67{,}370$$

ACTIVE CLIENTS PER BRANCH

$$\frac{4{,}024}{2} = 2{,}012$$

NET LOAN PORTFOLIO PER BRANCH

$$\frac{875{,}800}{2} = 437{,}900$$

SAVINGS PER BRANCH

$$\frac{60{,}000}{2} = 30{,}000$$

Data come from reports C4, C5, and E1.

4.7.2 Financial productivity indicators

Financial productivity indicators look at how well the institution uses its resources to generate income.

Yield gap

YIELD GAP is a highly useful indicator that all institutions should monitor regularly. It measures the difference between the theoretical interest yield the institution ought to be producing and the actual interest income received during a period. A large YIELD GAP should be investigated, since it may signal delinquency, fraud, or accounting problems.

The theoretical interest yield is the interest rate charged on an outstanding loan balance that would generate the same interest income as the method used. If the institution currently charges interest on the declining balance, the nominal interest rate and the theoretical interest yield are equivalent.[23] The actual interest yield is derived from the financial statements as the interest income for the period divided by the average net loan portfolio during the period.

YIELD GAP

Theoretical interest yield – actual interest yield

For ASPIRE …

The YIELD GAP is calculated as follows:

$$48\% - \frac{360{,}360}{782{,}000} = 48\% - 46.1\% = 1.9\%$$

Data come from reports D1 and E1.

Yield on performing assets and yield on portfolio

Two other indicators are suggested for monitoring financial productivity—YIELD ON PERFORMING ASSETS and YIELD ON PORTFOLIO.[24] Which should be used depends on how the institution is financed. The preferred indicator for financial institutions is YIELD ON PERFORMING ASSETS, which compares all financial income—interest, fee income, and late fees earned on credit services as well as income earned on investments—with average performing assets, as defined in section 4.1.1. This indicator measures the productivity of the institution's management of its resources.

YIELD ON PERFORMING ASSETS

$$\frac{\text{Financial income}}{\text{Average performing assets}} \text{ X } 100\%$$

For ASPIRE …

The YIELD ON PERFORMING ASSETS is calculated as follows:

$$\frac{412{,}140}{784{,}650} \text{ X } 100\% = 52.5\%$$

Data come from reports D7 and E1.

For most microfinance institutions, however, YIELD ON PORTFOLIO provides more reliable trend information. If an institution receives large, infrequent disbursements from a donor, YIELD ON PERFORMING ASSETS will vary with the timing of the disbursements, over which the institution has little control. YIELD ON PORTFOLIO compares credit service income (that is, income excluding that on investments) with the average net outstanding loan portfolio. Thus in contrast to YIELD ON PERFORMING ASSETS, it measures only the productivity of the loan portfolio. Decreases in the yield figure (assuming the same effective interest rate) indicate that the portfolio is not performing well.

YIELD ON PORTFOLIO

$$\frac{\text{Credit service income}}{\text{Average net outstanding loan portfolio}}$$

For ASPIRE …

The YIELD ON PORTFOLIO is calculated as follows:

$$\frac{407{,}760}{782{,}000} \text{ X } 100\% = 52.1\%$$

Data come from report E1.

4.7.3 Efficiency indicators

Five efficiency indicators are suggested. LOAN OFFICERS AS A PERCENTAGE OF STAFF is important to monitor to ensure that the institution is benefiting from economies of scale by increasing the share of loan officers, who have primary responsibility for generating income.[25]

OPERATING COST RATIO is the most important indicator of institutional efficiency discussed here. It compares the institution's operating expenses (monthly or annual) with its average outstanding loan portfolio for the same period. The definition of operating expenses here is the same as that used in the income statements—as including salaries, administrative expenses, depreciation, and overhead but excluding financial costs and loan loss provisions.

Institutions with a high share of interest-bearing debt from a variety of sources need to track the AVERAGE COST OF DEBT. As the average cost of funds changes, interest and fee structures for credit operations may need to change accordingly.

Institutions using peer lending methodologies can gain (or lose) significant efficiencies through changes in AVERAGE GROUP SIZE. For those using multiple methodologies the calculation of this indicator should consider only clients linked to the institution through groups.

Finally, for institutions with branch operations and head offices that solely provide administrative support to those branches, the HEAD OFFICE OVERHEAD SHARE is an important indicator to track (another useful measure is head office staff as a percentage of total staff). With increasing economies of scale, this indicator should decrease.

Efficiency indicators

LOAN OFFICERS AS A PERCENTAGE OF STAFF

$$\frac{\text{Number of loan officers}}{\text{Total number of staff}} \text{ X } 100\%$$

OPERATING COST RATIO

$$\frac{\text{Total operating costs}}{\text{Average net outstanding portfolio}} \text{ X } 100\%$$

AVERAGE COST OF DEBT

$$\frac{\text{Interest expense}}{\text{Average interest-bearing debt}} \text{ X } 100\%$$

AVERAGE GROUP SIZE

$$\frac{\text{Total number of active clients in groups}}{\text{Total number of active groups}}$$

HEAD OFFICE OVERHEAD SHARE

$$\frac{\text{Head office operating costs}}{\text{Total operating costs}} \text{ X } 100\%$$

For ASPIRE …

The efficiency indicators are calculated as follows:

LOAN OFFICERS AS A PERCENTAGE OF STAFF

$$\frac{13}{24} \text{ X } 100\% = 54\%$$

OPERATING COST RATIO

$$\frac{285{,}300}{782{,}000} \text{ X } 100\% = 36.5\%$$

AVERAGE COST OF DEBT

$$\frac{63{,}000}{625{,}580} \text{ X } 100\% = 10.1\%$$

AVERAGE GROUP SIZE

$$\frac{3{,}500}{900} = 3.9$$

HEAD OFFICE OVERHEAD SHARE

$$\frac{26{,}000}{285{,}300} \text{ X } 100\% = 9.1\%$$

Data come from reports B4, D3, and E1.

Notes

1. See SEEP Network, *Financial Ratio Analysis of Micro-Finance Institutions* (New York: PACT Publications, 1995), p. 35.

2. This section and section 4.1.3 draw heavily on SEEP Network, *Financial Ratio Analysis of Micro-Finance Institutions* (New York: PACT Publications, 1995).

3. To avoid double counting, deposits used to leverage guarantee funds that do not earn interest should not be included in performing assets. For example, a bank might require a $100,000 deposit to leverage a $500,000 loan (a 5 to 1 leverage ratio). The $500,000 is available for financing the portfolio, but the $100,000 deposit cannot be used because it serves as a guarantee to the bank in case of a default on the loan. In this case a straightforward summation of bank deposits plus portfolio would imply

$600,000 of performing assets. But because management has no discretionary control over the $100,000 deposit, performing assets should be considered to be only $500,000.

4. In some exceptional cases it may be more appropriate to use loan portfolio as the denominator. For example, an institution receiving large, infrequent disbursements from a donor would have excess funds tied up in investments until they could be absorbed by program growth. These excess funds would be included in calculations involving either performing assets or total assets, driving down the institution's measured efficiency.

5. Margaret Bartel and others, *Financial Management Ratios I: Analyzing Profitability in Microcredit Programs* (New York: PACT Publictions, 1994, p. 6).

6. CGAP has funded a database on the financial performance of microfinance institutions to help managers compare their institution's performance with that of similar programs. The information in this database is reported semiannually in the *MicroBanking Bulletin*. Microfinance institutions participate on a quid pro quo basis: they provide financial data and information on accounting practices, subsidies, liability structure, loan delinquency, and the like in return for a comparison of their results with those of a group of similar programs. While the information they provide remains confidential, the *MicroBanking Bulletin* provides a broader audience with statistical data on peer groups of microfinance institutions. For information contact the Economics Institute Project Office in Chile (tel.: 56-2-821-2360, fax: 56-2-821-4016, email: fnreview@microbanking.cl).

7. Portfolio monitoring techniques are becoming the most well-documented subject in the microfinance literature. They are treated extensively in Katherine Stearns, *The Hidden Beast: Delinquency in Microenterprise Credit Programs* (Discussion Paper Series, Document 5, Washington, D.C.: ACCION, 1991), and in nearly all documents in annex 3.

8. These three criteria are proposed by William Tucker in an unpublished paper, "Measuring Village Bank Delinquency." For a copy of the paper contact Community Finance, Inc. (tel.: 410-727-8240, email: tuckerCFI@aol.com).

9. Katherine Stearns, Discussion Paper Series, Document 5, Washington, D.C.: ACCION, 1991. The monograph documents 20 indicators in use by microenterprise programs to measure delinquency, all giving widely divergent results.

10. See, for example, Robert Peck Christen, *Banking Services for the Poor: Managing for Financial Success* (Washington, D.C.: ACCION, 1997) and Inter-American Development Bank, *Technical Guide for the Analysis of Microenterprise Finance Institutions* (Washington, D.C., 1994).

11. For detail on different approaches to determining appropriate provisioning see section 2.2.2 of Robert Peck Christen, *Banking Services for the Poor: Managing for Financial Success* (Washington, D.C.: ACCION, 1997).

12. Average portfolio calculations should always be based on monthly amounts. For simplicity, the example here uses only beginning and ending balances.

13. Detailed treatment of these financial indicators can be found in any text on bank management. See, for example, chapter 4 in Timothy W. Koch, *Bank Management* (3d ed., Dryden Press, 1995).

14. For example, an institution leveraged with $400,000 of debt to $100,000 of equity would have an equity multiplier of 5.0. A return on assets of 20 percent would be the equivalent of a 100 percent return on equity. Of course, this works both ways. Losses are also multiplied. A loss representing a –20 percent return on assets in an institution leveraged

fivefold wipes out 100 percent of the equity. Thus the concern regulators have for capital adequacy (see section 4.4.1).

15. Although bank managers generally focus on RETURN ON EQUITY, bank regulators prefer RETURN ON ASSETS because it shows how well management has used the institution's assets to generate income and does not reward institutions for seeking highly leveraged positions (Margaret Bartel and others, *Financial Management Ratios I: Analyzing Profitability in Microcredit Programs*, New York: PACT Publications, 1994, p. 10).

16. For a thorough treatment of ways of evaluating profitability and a subsidy-adjusted return on assets model see section 2.4 in Robert Peck Christen, *Banking Services for the Poor: Managing for Financial Success* (Washington, D.C.: ACCION, 1997).

17. A more sophisticated version of this indicator is the subsidy dependency index developed by Jacob Yaron in *Assessing Development Finance Institutions: A Public Interest Analysis* (World Bank Discussion Paper 174, Washington, D.C., 1992).

18. Donors could ease liquidity problems by adapting their funding practices to microfinance institutions' circumstances. Donors often have policies against their funds sitting "idle," not recognizing liquidity reserves as a valid use of funds. And they are sometimes reluctant to make a new disbursement until the institution depletes the previous one, contributing to the common pattern among microfinance institutions of maintaining dangerously low liquidity reserves.

19. Margaret Bartel and others, *Financial Management Ratios II: Analyzing for Quality and Soundness in Microcredit Programs* (New York: PACT Publications, 1994, p. 10); and Robert Peck Christen, *Banking Services for the Poor: Managing for Financial Success* (Washington, D.C.: ACCION, 1997, section 4.3.2). Christen gives an extensive treatment of liquidity management.

20. For a concise treatment of gap analysis see Margaret Bartel and others, *Financial Management Ratios II: Analyzing for Quality and Soundness in Microcredit Programs* (New York: PACT Publications, 1994, pp. 7–9). For a more detailed treatment see Robert Peck Christen, *Banking Services for the Poor: Managing for Financial Success* (Washington, D.C.: ACCION, 1997, section 4.1). In addition, any standard bank management text will devote at least a chapter to gap analysis. See, for example, chapter 8 in Timothy W. Koch, *Bank Management* (3d ed., Dryden Press, 1995).

21. For a thorough explanation on calculating effective interest rates see CGAP Occasional Paper 1 (Washington, D.C.: World Bank, 1997).

22. Of course, loan size is far from a perfect indicator of a clientele's economic level and should be interpreted with caution. An institution might wish to develop other indicators that can be incorporated into its standard loan analysis procedures and thus monitored relatively easily.

23. The interest yield calculation does not take into consideration fees and mandatory savings requirements that influence what is often called the effective interest rate. Of concern in this calculation is solely the projected interest income. For detailed information on calculating interest yields see CGAP Occasional Paper 1 (Washington, D.C.: World Bank, 1997).

24. Both these indicators are subject to increases due not to higher productivity but to higher interest rates charged to clients. So trend analysis should identify whether interest rates have changed.

25. For more detail on this indicator see David Ferrand, *Financial Analysis of Micro-Finance Institutions* (London: Intermediate Technology Publications, 1997) and Charles Waterfield and Ann Duval, *CARE Savings and Credit Sourcebook* (New York: PACT Publications, 1997), particularly chapters 9 and 11.

CHAPTER 5

Developing and Implementing a Management Information System

This chapter presents a step-by-step process for developing and implementing a new MIS. It describes the four phases—conceptualization, assessment and design, development and implementation, and maintenance—with frequent references to other parts of the handbook for more detail.

Developing a management information system is a complex task for a microfinance institution.[1] A system takes time to conceptualize, design, program, test, and implement. Managers need to set realistic goals in developing an automated MIS for their institution.

Developing an information system forces an institution to assess and articulate issues that reach to its core: What does it want to accomplish? How does it go about its tasks? How does it determine success? Creating a successful MIS tailored to the needs of the institution thus requires an integrated, forward-looking approach.

This chapter outlines a step-by-step approach to implementing a new management information system

This chapter outlines a step-by-step approach to implementing a new management information system. The approach is broad enough to accommodate the many alternatives—from manual to computerized, from off-the-shelf to in-house custom applications, from basic systems to systems with all the "bells and whistles."

The process can be divided into four phases, each of which the chapter describes in detail:

- *Phase 1: Conceptualization.* The institution defines its needs and performs an initial assessment of viable alternatives. By the end of the phase it will have developed a strategy document outlining a course of action.
- *Phase 2: Detailed assessment and design.* The institution carefully assesses systems under consideration for purchase. If it has decided to modify an existing system or to develop a custom system, it will address design issues.
- *Phase 3: System development and implementation.* The institution develops (or refines or adapts) the system it has chosen and implements the system.
- *Phase 4: System maintenance and MIS audits.* In this final phase the institution focuses on issues that must be addressed after the MIS has been developed and implemented—system maintenance, modifications, and periodic audits to ensure that the system is functioning properly.

5.1 Phase 1: Conceptualization

The conceptualization phase focuses on:

- Identifying the institution's needs
- Determining what is feasible with respect to technology, staff capabilities, and financial resources
- Performing an initial assessment of the alternatives—purchasing an off-the-shelf system, customizing a standard system, or developing a custom in-house system.

The steps in the conceptualization phase
1. Forming the task force
2. Defining needs
3. Determining what is feasible
4. Assessing the alternatives
5. Reporting task force findings

The conceptualization phase culminates in a report on the findings that will guide the second phase.

5.1.1 Step 1: Forming the task force

The starting point is to form a task force to provide guidance and input throughout the early part of the process and to ensure broad representation in defining the institution's information needs. Programmers and external consultants can provide expertise and advice, but representative users of information—people who understand the institution, its procedures, and its philosophy and work culture—must be heavily involved in the critical early stages. The task force should meet regularly—at least once a week—for perhaps four to six weeks.

The task force should be made up of one knowledgeable person from each department, along with the person responsible for internal auditing. It should include representation from each level in the organization, from senior management to field staff. And it should include several members from the information systems department—selected for their listening skills—to document the input from the task force and coordinate the technical work.

An institution with limited in-house expertise may want to hire an external consultant, but this person's role should be clearly defined as one of advising, not decisionmaking. Because these early stages should not be rushed, it is preferable to hire a locally available consultant who can devote one or two days a week to the process rather than work full-time. It is also useful to consult with the institution's external auditor, although the auditor need not have a representative on the task force.

The task force should be led by a senior person in the organization who has a broad understanding of the institution and commands respect. And it is helpful in large institutions to have a "project champion," an influential person such as the executive director or the board chair who endorses the process, ensures that everyone takes it seriously, and clears bureaucratic hurdles.

5.1.2 Step 2: Defining needs

The definition of needs is a critical step. It produces information that will later help to sift through the many alternatives. Handled properly, it can avoid months of frustration and make the difference between success and failure for the entire process.

Documenting existing policies and procedures

Whether an institution plans to develop a new, custom MIS or analyze systems for purchase, it needs to assemble all documentation on its existing policies and procedures. Four main areas require documentation (box 5.1):

- Accounting policies and procedures
- Basic operating policies and procedures
- Internal control procedures
- System parameter values.

Documentation in some of these areas may be nonexistent, outdated, limited in coverage, or contradictory. Some institutions may find that the necessary information exists only in the heads of staff. In this case key staff should be available to participate in the rest of the steps in phase 1 and the task force should allocate more time to those steps.

There is no need at this time to generate or revise written documentation. All policies and procedures are subject to change during development and installation of the new MIS, and documentation should be revised only after the basic elements of the new system are well defined.

Handled properly, the definition of needs can avoid months of frustration and make the difference between success and failure for the entire process

Defining information needs and flows

The documentation on policies and procedures can be used to diagram the flow of information through the institution. The goal is to discover answers to these questions:

- Where are data collected?
- Where are data transformed into information?
- Who needs what information?
- What decisions need to be made?
- What information is required to make those decisions?
- When do the decisionmakers need it?
- Where is information stored?
- Where can reengineering make processes more efficient?[2]
- Where are the leverage points and critical processing points where a change in procedure could significantly improve efficiency and service?

A database programmer needs an information flow diagram—showing where data are collected, transformed, used for decisionmaking, and stored—in order to understand how a process such as loan disbursement works and thus to create a program that facilitates that process. Documentation of the process is also important because without it, the institution hiring the programmer will be unable to hold the programmer accountable for the final output.

Box 5.1

Suggested documents to assemble

Accounting policies and procedures
- Chart of accounts
- Copies of all operating forms (vouchers, transfers, receipts, passbooks)
- Copies of all financial statements with most recent data
- Copy of latest audited financial statements
- Accounting policies manual (which should cover such topics as interest accrual, write-offs, tax obligations, nonaccrual items, and error correction)
- Assessment of general ledger reconciliation with subledgers
- Information on restrictions and requirements by all funders and regulatory bodies

Basic operating policies and procedures
- Institutional organigram
- Information and process flowcharts
- Copies of all forms for collecting client information and analyzing, approving, and disbursing loans
- Cash management policies
- Banking and check transaction procedures
- Payroll authorization and payment
- Lending transaction procedures
- Savings transaction procedures
- Contracting procedures
- Client numbering procedures

Internal control procedures
- Job descriptions
- Loan authorization
- Payment authorization
- Check issuance
- Client database input and maintenance
- Payment and receipt document handling
- Daily balancing (input documents, processed transactions, and cash)
- Daily closing of tellers and operators
- Daily clearing of suspense and exception items
- Daily and cycle backup
- Custody of system backup media
- Custody of processed documents
- Custody of blank documents (checks, numbered receipts)
- Bank reconciliation
- System access passwords and overrides

System parameter values
- Descriptions of all types of loan and savings accounts
- Coding lists used for such concepts as loan purpose and geographic and personnel codes
- Detailed information on calculation of interest, penalties, and fees
- Sample registers from all loan and savings products (for repayment scheduling and interest calculations)
- Accounting fiscal periods
- Product account numbering procedures
- Security structure and access levels

Charting information flows is not difficult. But unless it is done thoughtfully, the result can be a pile of drawings that no one but the system analyst understands. The following guidelines should help to achieve more useful results.

First, it is essential to realize that diagramming the information system is a subjective process—how the system looks depends on who is looking at it. So while one person could be tasked to diagram the system, that person should consult with many others, especially those who use the system. The system analyst should ask users what they do and why they do it. What information do they need? What do they do with it? Why? To whom do they send information and reports? Why? It is important to discover how users perceive their place in the process. The analyst can sketch out flows while talking with users so that they can check the accuracy. They should review for accuracy again after a draft of a process has been prepared.

Second, it is important to define where a process starts and where it ends. Loan disbursement might end when the client receives the check, or it might end when the loan documentation is filed. Again, the definition is subjective, but there must be consensus. The system analyst could follow paper through the office, asking questions.

Third, the system analyst should go beyond simply diagramming information flows. After diagramming the processes, the analyst should step back and assess leverage points and key decisionmaking points in the system. If the system is not computerized, the analyst should determine what effect computerization might have on it. How would the system change if data were stored, transformed, and reported by computer? If the system is computerized, the analyst should consider how a different computer environment (such as a network or client-server system) might affect the processes. Creative, open-minded thinking is required and an outside consultant's analysis and recommendations could be helpful.

Suggested processes to map

- *Loan application approval and rejection*
- *Loan disbursement*
- *Loan repayment (including late loans, calculations, and overrides)*
- *The opening of a savings account*

Assessing the current system

The task force should analyze the current system even if the intent is to completely replace it. Identifying its weaknesses and the reasons users are dissatisfied with it can pinpoint needs that should be addressed by the new system. The following questions can guide this review:

- What type of system is it—manual, computerized, or a combination?
- What skills are required to use and maintain the system?
- What are the system's strengths and weaknesses?
- Can the system be expanded or improved?
- How satisfied are the system's users?
- What are the causes of dissatisfaction?

Projecting future needs

Predicting future needs is a critical part of the task force's job. An NGO that plans to grow into a formal financial institution in the next few years is best off investing in an MIS that will stay with it well into its new incarnation. The last thing an institution should have to do in the midst of a massive expansion is to change its MIS. Planning for the future and "overinvesting" now can avoid serious problems later on.

An MIS should be expected to have a minimum life of five years, adapting to the institution's changing needs as it grows. To project those needs, it is helpful to consult the institution's strategic plan if it has one. These are some of the questions that should guide the discussion of future needs:

- What rate of growth is expected?
- What changes in financial products are expected?
- What new financial products are expected?
- What issues of centralization and decentralization are expected?
- What reorganizations are expected?
- What changes in workflows are expected?

Answering these questions precisely may be difficult, but the key issue lies in just two questions: Is the institution expected to be stable (with the exception of growth)? And does the institution have a culture of innovation, always modifying products and procedures and trying new things, or does it tend to stay with what works best? An institution that frequently changes procedures and introduces new financial products is better off with an option that includes establishing the in-house capability to modify and adapt its system (box 5.2).

5.1.3 Step 3: Determining what is feasible

A principal job for the task force is to determine how much computerization is feasible

Once the institution's needs have been defined, it is time to assess what is feasible. If at all practical, a microfinance institution should have a high degree of computerization in its information system. So a principal job for the task force is to determine how much computerization is feasible, by assessing staff capabilities, technology issues, and cost considerations.

Staff capabilities

The capability of staff to manage computers is critical to the successful incorporation of new computer technologies. The task force needs to examine the following issues:

- Who will be managing the new system? Is there an adequate information systems department, or will the department need to be created or strengthened?
- Are there local consultants who can provide ongoing support? Are they competent, reliable, and affordable?
- Do current staff have appropriate skills, or will new staff need to be hired?

BOX 5.2

Even good systems eventually need to be replaced: The case of ADEMI

ADEMI, which operates in the Dominican Republic, was one of the first prominent microcredit programs in Latin America and also one of the first to automate an information system. In 1984 it developed a database system advanced enough to automate the printing of loan contracts and client repayment vouchers and to allow senior managers to monitor account balances directly from their desktop computers.

Technological change and growth to more than 18,000 loans led ADEMI to revamp its MIS four years ago. Nearly all the work was done in-house by its experienced MIS department. As with the earlier system, ADEMI chose to use the advanced UNIX operating system rather than the more common PC-based systems.

The new system allows all the Santo Domingo offices and the regional offices to connect on-line. Branch offices not connected to the MIS send transaction receipts every few days to the regional office, where information is input and reports are generated. These reports are then sent to the branch offices, which compare them with their independent systems to verify the accuracy of data entry.

Since the system was developed, the main developer has left ADEMI, though he continues to do all substantial maintenance on a quarter-time retainer. ADEMI's procedures and financial product offerings change regularly, requiring corresponding changes in the software.

- How much training of users will be required? Will this training be provided in-house or by an external source?
- Does the institution have systems programmers on staff? Does it intend to hire programmers? How capable are local programmers? What are salary levels for programmers?
- How strong are the accounting department staff? Will they be able to handle a sophisticated system? Are they able to keep information up to date?[3]
- What level of complexity in computer systems can be supported at the head office? At branch offices?

When budgeting for a system or comparing the prices of systems, it is important to look at the total costs, including future maintenance and support

Technology issues

The task force needs to assess many technical issues to determine the feasibility of using computer technology in the information system:

- Is the electrical system adequate to install computers in the head office? In branch offices?
- Are phone communications adequate to support any branch communications envisioned? Is email access adequate for any international technical support envisioned?
- What level of computerization should the institution strive for? Should the headquarters be fully computerized? Should the branch offices be computerized?
- Should a network be installed? If so, what type? Should the system support front office activities, in which staff use computers in interactions with clients, or only back office activities, in which information is entered from paper-based records?
- How much of the existing hardware can be used, and how much will need to be replaced? What hardware purchases can the institution afford?

Cost issues

When budgeting for a system or comparing the prices of systems, it is important to look at the total costs, including future maintenance and support, before making a decision. The cost of the software may be dwarfed by the cost of technical assistance provided with it, such as assistance with configuration, data transfer, or staff training. For one widely used microfinance portfolio system the software costs as little as $500, but the contract for assistance in installation, configuration, and training averages $50,000. The cost of annual support or updates often matches or exceeds the original cost of the software.

What does an MIS cost? is a difficult question to answer. It is not unlike the question, What does a car cost? The answer depends on many factors:

- What will the MIS be used for? Short trips to the grocery store, essential transportation to work, or racing in the Grand Prix? Each of these answers will result in a different purchasing decision.
- How large is the family? An institution that has to carry a lot of passengers will need a vehicle that accommodates them.

- How long does the purchase need to last? A long-term decision will mean a different choice than an interim purchase.
- How much is the institution able and willing to spend? Prices vary tremendously. Purchasers often narrow their range of options by considering only what they can afford. Perhaps the budget allows shopping only for used cars or for low-end rather than luxury cars.
- How important are the options? "Bells and whistles," like power windows and cruise control, raise the costs above the basic model, or may not even be available on the model under consideration.

The cost of installing an MIS may be high, but the cost of not having information is higher

Clearly, situations, needs, and available resources vary too widely to give precise guidelines on how much to budget. But in preparing a budget, an institution needs to be sure to consider the following categories:

- Hardware purchases (servers, computers, printers, network cards, backup power supplies, generators, tape backup units, cables)
- Infrastructure improvements (wiring, improved security, new work spaces, temperature and humidity control)
- Higher utility bills and insurance premiums
- Software licensing fees (sometimes charged per user or per installation; network versions often cost more)
- Software customization fees
- Installation technical assistance (support during configuration, installation, and data transfer)
- Extra staffing during installation (temporary help, overtime pay, bonuses)
- Staff training costs (materials and instructors, overtime pay, temporary help)
- Technical support (monthly or annual fee)
- Cost of future software upgrades, improvements, and modifications
- Cost of future hardware upgrades
- Cost of periodic technical support for repair or upgrading of computers
- Higher staffing costs due to new staff hired or raises required by enhanced responsibilities.

All these costs will depend on choices on head office and branch office computerization and between front office and back office operations, accounting and portfolio system computerization, custom and off-the-shelf software, and a local and international software firm. Given the low cost of accounting systems, there is little justification for not computerizing accounting operations at the headquarters level. Portfolio systems remain relatively costly, but can normally be justified by the institution's dependence for its future existence on accurate and timely information on loan status.

The cost of installing an MIS may be high, but the cost of not having information is higher. For an institution of significant size, the benefits of investing in information can quickly exceed the costs—even of expensive systems. The best strategy is to invest for the long term. Paying more now for a system that will serve the institution longer can mean lower annual costs.

5.1.4 Step 4: Assessing the alternatives

After defining the institution's needs and determining what is feasible, the task force is prepared to assess the alternatives. (For a microfinance institution that has chosen not to computerize operations, this section is not relevant.) Many of the issues the task force has addressed will have narrowed the range of alternatives. For example, a choice to purchase an integrated system will eliminate most accounting packages and the portfolio systems with inadequate accounting modules. Budgetary limits might exclude most internationally supported portfolio systems and many local systems.

If technical support is not timely or reliable, an institution could be forced to operate without a functioning system

There are three broad choices for computerization:

- Purchase a standard off-the-shelf system
- Modify an existing system used elsewhere
- Develop a custom in-house system.

An institution could make different choices for its accounting and portfolio systems. For example, it could purchase an off-the-shelf accounting package, but design an in-house portfolio system.

Three main questions drive the choice among these alternatives:

- How much money is the institution willing to invest?
- How flexible is the institution willing to be in adapting policies and procedures to the system under consideration?
- How reliable is technical support for the system under consideration?

The first two questions converge in the tradeoff between cost and customization, or the extent to which the system matches the institution's policies and procedures. Reliability of technical support is a critical question. Systems can crash for any number of reasons, and it takes technical expertise to get them running properly again. If technical support is not timely or reliable, an institution could be forced to operate without a functioning system. All three of these questions need to be kept in mind in choosing among the three options (table 5.1).

There are a growing number of locally developed information systems in most countries, designed for the local operating environment and available with local technical support. Because of their number and limited relevance outside their locality, listing these systems in the handbook is not feasible. Annex 4 provides summary reviews and contact information for several internationally supported systems used by microfinance institutions in more than one country.

Purchasing off-the-shelf software

Before deciding on an MIS package, a microfinance institution—and the software firm supporting the package—have to carefully assess the fit between the institution's practices, present and future, and the software's capabilities. Ideally, an institution should have an MIS that is inseparable from its operating procedures. But more often than not, its operating procedures will differ so much from the procedures assumed by off-the-shelf software that the incompatibilities cannot be resolved. And systems differ not only in their underlying philosophy and approach, but also in their features and capabilities. So the selection process needs to begin with absolute clarity about the functionality the institution expects from the MIS and the degree to which it is willing to adjust its procedures to match the MIS.

In evaluating software of this complexity, it is often easier to eliminate a program from consideration than to determine whether it will be fully compatible with the institution's needs. The assessment should therefore be divided into two stages. The first, described here, is an initial assessment to narrow the choice to a small number of promising alternatives. These will receive more detailed assessment in the second stage.

In the initial assessment the task force should carefully review all documentation the software firm will provide and, ideally, demos or trial versions of the software

In the initial assessment the task force should carefully review all documentation the software firm will provide and, ideally, demos or trial versions of the software. It should focus on major issues of compatibility (such as types of financial products and interest calculation methods supported), rather than on more technical details (such as procedures for calculating penalties), which are sometimes difficult to determine from basic documentation.

Areas of potential incompatibility should be carefully noted for later discussion with the provider. Incompatibilities can sometimes be solved through undocumented features of the software or through relatively minor software changes. But sometimes seemingly minor incompatibilities require a complete rewrite, ruling out the system. It is often difficult to know in advance which incompatibilities can eliminate a system from consideration and which can be easily addressed.

TABLE 5.1

How the options compare

Option	Advantages	Disadvantages
Purchasing an off-the-shelf system	• Low to medium cost • Likely to operate relatively error-free • Short time frame for implementation	• Dependent on outside technical support • Unlikely to fully match institution's policies and procedures • Cannot be modified as institution changes
Modifying an existing system	• Likely to operate relatively error-free • Medium time frame for implementation • Can be closely adapted to institution's policies and procedures	• Medium to high cost • Dependent on outside technical support • Future modifications costly
Developing an in-house system	• Technical support is in-house • Can be fully adapted to institution's policies and procedures • Can be modified to match institution's changes	• High cost • Will require debugging • Long development time frame

Even more important than assessing features and capabilities is finding out about support. A system that offers all the necessary features does no good if it cannot be kept running because of lack of swift and reliable technical support. If the task force is assessing a software package in use in an institution within reasonable traveling distance, it should visit that installation for several days, observe the system in operation, and interview the users about their satisfaction with both the system and the support. If a visit is not possible, users could be contacted by phone or letter. In assessing the quality and timeliness of the provider's technical support, the task force should focus on these questions:

- What is the response time to serious technical problems (those that make the system unusable)?
- How successful is the provider in solving technical problems?
- What is the cost of technical support? (Bringing in a technician from outside the country can result in very costly technical support.)

If the system passes this initial assessment, its compatibility must still be discussed in detail with the software firm (see section 5.2.1).

Modifying an existing software system

Many software packages are available in two forms: an off-the-shelf version, in which customization is limited to configuration options available through the software, and a custom version, in which the software firm incorporates modules and routines not in the standard version or modifies routines or writes new ones to the client's specifications.

A software package will probably need major modifications if it is relatively new, has been used in few institutions or operating environments (different countries or types of institutions), or has not previously been adapted to a wide variety of lending methodologies. Even if the software package is nearly exhaustive in functionality, extensive programming may be needed if the microfinance institution is unwilling to compromise on its operating methods and accounting conventions.

Extensive programming may be needed if the microfinance institution is unwilling to compromise on its operating methods and accounting conventions

Even with seemingly minor changes, the custom version is often much more expensive than the off-the-shelf version, because of the difficulty of customizing a program. Source code for a complex MIS can be modified by only a handful of people—ideally, the original programmers. Any change, no matter how minor, needs to be carefully tested and debugged, because a change in one area of the program can affect apparently unrelated areas. Customization also causes potential problems for the software firm in future upgrades. If a change for one institution is incompatible with the installation in another, the software firm must maintain multiple sets of source code for future improvements, and upgrades—or even bug fixes—become a nightmare.

Customization of a solid software package to meet an institution's needs is often necessary and is often the best alternative. But given the cost and the potential for bugs, such customization should almost always be limited to the essentials and should be carefully thought out beforehand.

Developing a custom system

Although many microfinance institutions use preexisting, off-the-shelf *accounting* systems, most have chosen to develop a custom *portfolio* system, for several reasons: lack of solid, identifiable alternatives for purchase, a preference for a system fully compatible with operations, and concern about ability to improve and modify the system to meet future needs.[4] This has been a logical or even unavoidable decision. But as more and more systems are developed in response to the growing demand for specialized microfinance software, developing a custom system should become less necessary.

If the system is not well conceived beforehand, the development can take much longer

Developing a new, custom MIS is a massive effort. Designing and developing the core, or most essential, routines of a moderate system can take a minimum of six months of programmer time. Debugging the system and completing all the noncore features (a wide variety of reports, error correction routines, user-friendly features) usually take at least another six months of programmer time.

Programmers often want to leap immediately into system development. But if the system is not well conceived beforehand, the development can take much longer, with major elements of the system needing to be reworked. And in the

BOX 5.3

Thoroughly assessing needs for a successful MIS: The experience of PRODEM

Microfinance institutions need information systems that are responsive to the needs of many different users, capable of managing an array of data, and flexible enough to adjust to changing requirements. Meeting these objectives while keeping costs down is a challenge. PRODEM, a Bolivian nongovernmental organization and ACCION affiliate that serves more than 27,000 clients through 40 branch offices, met the challenge this way: it established in-house capacity to develop a customized information system.

PRODEM hired seven new staff experienced in system development. This team worked with the full range of users to identify their information management needs. Branch credit officers needed to manage portfolios and liquidity locally and to monitor information on cash flow and expenditures, self-sufficiency indicators, and petty cash. Regional and national credit officers needed to be able to aggregate balances and calculate statistics quickly. Bank auditors and supervisors had other needs, and the team solicited their input as well. The team then incorporated the requirements of all these users into the design of the information system.

The users' participation in developing the information system ensured that its design meets their needs, gave them a sense of ownership of the new system and thus increased their willingness to integrate it into their work, and expedited training. Using in-house staff to develop the system gives PRODEM the flexibility to update and change its information system gradually, to meet users' changing needs and broaden client services. After gaining experience with the system, users may identify deficiencies or suggest enhancements that will help them do their work better and faster.

The new information system has helped PRODEM develop new financial products and services. Among its innovations: loan terms and payment schedules tailored to fit clients' cash flow. The system enables credit officers to monitor a client's cash flow over several loan cycles and then customize the client's payment schedule to match.

Source: Eduardo Bazoberry, executive director of PRODEM.

worst cases (not all that uncommon) the system may never work properly. The importance of following a systematic process of needs assessment and system design cannot be overemphasized (box 5.3).

A custom system can be developed in-house, by staff of the institution, which ensures access to the source code and provision of technical support, although the ongoing costs of that support may be high. Or development can be contracted out to an independent firm, in which case ownership of the source code and the cost and reliability of technical support need to be carefully negotiated (box 5.4).

The importance of following a systematic process of needs assessment and system design cannot be overemphasized

5.1.5 Step 5: Preparing the MIS needs assessment report

The task force has nearly completed its responsibilities. It has identified the institution's information needs, determined what is feasible, and performed an initial assessment of alternatives based on those conditions. The task force may have recommended a mix of manual and automated systems. It may have compiled a list of five or six potentially compatible software alternatives, some for account-

BOX 5.4

Contracting with a software firm to develop a customized system: The experience of COMPARTAMOS

COMPARTAMOS, an institution providing credit services in rural Mexico, works with 35,000 clients out of 11 branches and plans significant expansion. Its strategic planning process identified an MIS as a high priority for supporting this expansion. Another priority turned out to be devolving responsibility to regional and branch offices.

After COMPARTAMOS staff assessed the institution's MIS needs and developed system specifications, they selected a commercial software package for accounting developed and supported by a local company. The system cost $4,000, and annual maintenance $1,000. The system has been in operation for several years in other companies whose staff are highly satisfied with its performance.

For loan portfolio management, however, COMPARTAMOS found no suitable candidates. So its staff decided to develop a customized system to meet their current and projected needs. They designed the system to work with up to 300,000 clients and to operate independently at the branch level, with daily uploading to the head office by modem. The head office would use a Windows NT network. Branch offices would operate with a single computer and printer; they need few computers because payments are received by local commercial banks.

Knowing that many efforts to contract software development have resulted in systems that perform poorly or not at all, COMPARTAMOS developed an innovative arrangement with the software company it hired for system development. The company agreed to have the systems developers work in a branch office for a year, to become familiar with the institution's operating policies and procedures, organizational culture, and information flows. After the system is completed, it will be maintained by the information systems staff of COMPARTAMOS, which has full access to the source code as part of its agreement with the software firm.

Expecting much growth, COMPARTAMOS has chosen to invest heavily in its MIS. Its innovative strategy for doing so is likely to result in success.

ing, some for portfolio management, some locally developed, some internationally supported. Or it may have concluded that the institution should purchase a certain accounting package and develop its own portfolio software.

Based on these preliminary findings, the task force can now prepare a report on the options, their estimated costs, and the likely time frames for implementation and present it to management for review and approval. Management should rank these options by priority and preference. It should also approve the subsequent course of action, including expenses related to phase 2.

In addition, the MIS project team needs to be formed. It should be made up of a mix of users and programmers—probably many of the task force members—but should have a heavier representation of information systems staff than the task force. The project team leader should be someone in the institution, not an external consultant. The leader needs to have the full support of the board and senior management and sufficient authority to keep things moving. The leader should report directly to senior management.

The steps in the assessment and design phase
- *Performing a detailed assessment of software*
- *Completing the design*
- *Finalizing the MIS plan*

5.2 Phase 2: Detailed assessment and design

In phase 2 the MIS project team builds on the research findings from phase 1 to produce the final decisions that will be implemented in phase 3. The steps in this phase are few but challenging. This phase requires the detailed technical review of software programs under consideration, reviews that can take up to a week each. Then the entire system needs to be designed in detail—from the database table structures to the information to be collected, the rules to be applied, and the report formats to be generated. Finally, a detailed implementation plan, timetable, and budget need to be prepared.

5.2.1 Step 1: Performing a detailed assessment of software

If the task force identified one or more promising software systems in phase 1, these systems now need a detailed assessment. If the institution is sophisticated, with a broad range of financial products, this assessment is best done in a face-to-face meeting, lasting three to five days, between one or two skilled staff from the software firm and the MIS project team. But if the institution is relatively unsophisticated, with only one or two loan products and little else, the assessment might require as little as one day and one representative from the software firm. If the package under review is supported from outside the country, the assessment can be costly.

Before the assessment all the documentation assembled on policies and procedures should be provided to the software firm. The firm's representatives will probably have a standard procedure to follow in the assessment, but the MIS project team should ensure that all the concerns raised during the initial assessment are carefully addressed, as well as all the issues raised in the following sessions on accounting and portfolio systems.

In general, when exploring the possibility of working with a software package, a microfinance institution can expect better final results if it is willing to:

- Be content with having the MIS meet 80–90 percent of the institution's needs and wants. The more demanded of the MIS, the more complex it becomes and the less likely that it will operate trouble-free.
- Adapt some of its rules to the standards of the MIS. An MIS will not always provide all the flexibility hoped for.
- Accept less "hard-programmed" automation. For example, a microfinance institution that always charges a 3 percent loan processing fee deducted from the principal amount before disbursement could have the software programmed to process the deduction automatically, saving data entry time. But if it decides in the future to change the percentage or the way the fee is processed, the software might not be easily altered. If changes to the software source code are necessary, the software firm will charge for the modifications.

A wealth of low-cost commercial accounting programs are marketed to small businesses in Western countries

Assessing accounting systems

Thanks to the move toward standard accounting principles, computerizing an accounting system presents few design difficulties. Because of the standardization and the large market for computerized accounting systems, software companies have been willing to create such systems. The range of choices for microfinance institutions is extensive because they do not need an accounting system specific to microfinance or even to commercial banking. Any full-featured standard accounting package is a candidate.

A wealth of low-cost commercial accounting programs are marketed to small businesses in Western countries. These programs are rich in features, graphically oriented (usually Windows-based), and inexpensive—usually less than $200. Some of the most common commercial packages include Peachtree Accounting, ACCPAC Accounting, Maestria, and Ciel.

Purchasing commercial accounting software can be the best option for a microfinance institution because:

- The software is far less expensive than developing a custom system.
- Well-developed user manuals are available. By contrast, local programmers invest little in developing user manuals, and in-house programmers concentrate more on developing and maintaining software than producing a good user manual.
- The software is well tested. Version 5.0 of a commercial software package will be far more reliable than software developed in-house or locally. Commercial software is exposed to a large market that quickly judges its usefulness.
- Software support is available from a well-established software firm. An institution has no guarantee that a local programmer, or a self-employed programmer who develops an in-house package, will be able to support and maintain the software in the future. But in purchasing software from a commercial software company, it can be relatively assured of continued support and upgrades.

An institution can probably meet its needs with such commercial accounting software. But because many of these products have been developed for Western markets, they may have features that conflict with the needs of users in other parts of the world. So it is important to consider likely conflicts and decide whether the conflicts preclude the use of the software. Some possible conflicts:

- The maximum number of digits for numbers. Consider a software product designed to support a maximum of eight digits (up to 99,999,999). While $99 million, for example, is a large monetary figure, 99 million in a highly devalued currency may not be.
- The ability to change report formats. Some software programs have report formats that are easy to modify; others have more complicated formats that may require outside assistance to modify.
- Lack of foreign exchange conversions. Many microfinance institutions receive funding or technical support from international donors and agencies and are expected to produce financial reports in two currencies—the local currency and a foreign currency. Not all commercial accounting programs support multiple currencies. A possible low-cost solution is to run the accounts on the accounting system in the local currency and then input the final financial reports into a spreadsheet for conversion into the foreign currency based on a single exchange rate.
- Difference in date format. If the program uses a date format different from that used in the institution's country, the institution should ensure that the date format can be altered. This is typically not a problem if the accounting program is Windows-based because the date format can be changed through Windows.

Whether selecting or designing accounting software, an institution should consider the following issues:

- The chart of accounts and report formats should allow masking of accounts. Masking allows users to attach extra characters to standard account numbers to identify cost centers or funds, especially useful when reporting on cost centers or the sources and uses of donor funds (see section 2.3).
- The program should prevent users from easily moving from one accounting period to another. If a user can readily enter transactions in any accounting period, the integrity of the accounts is compromised. To ensure proper controls, programs typically require users to post transactions to the general ledger or to print the general ledger before moving to a different accounting period.
- Financial software programs such as accounting programs should always have password access, to prevent unauthorized use and restrict specific users to specific tasks.
- An accounting program should print all relevant auditing information, especially for transaction reports such as a general ledger transaction report.
- The program should be intuitive, make accounting sense, and be accompanied by a strong user manual and software support. These characteristics will

ease the training of accounting staff in the use of the accounting program and increase their comfort with its operation.

Assessing portfolio systems

A portfolio system captures information and generates reports on the performance and status of client accounts. It is the main source of information for most staff in a microfinance institution and the area of greatest concern in the design of an MIS.

A portfolio system is the area of greatest concern in the design of an MIS

The portfolio system for a microfinance institution is complex and must be carefully designed to fit the institution and the financial products it offers. All microfinance institutions offer loans, the most complex product for the system to track. Institutions may also offer savings accounts, time deposits, checking accounts, transfers, credit cards, insurance policies, or other products. The portfolio system will need to be designed for all these products (and their subproducts), each of which operates under substantially different rules, such as for interest rates, interest calculation methods, maximum allowable amounts and terms, definition of overdue payments, and eligible collateral.

Many of the parameters that define a loan product interact primarily to determine two key issues: the repayment schedule and what to do when the client does not follow that schedule. The surprising variation in the way microfinance institutions treat these matters is at the root of many incompatibilities between off-the-shelf portfolio systems and institutions' practices.

Much of the variation is due to the tendency that microfinance institutions have had to adopt approaches that are simple to implement and make sense at the time rather than approaches that make sense from a finance viewpoint or resemble commercial banking standards. Once adopted, practices are hard to switch because changes in loan treatment cannot be implemented retroactively. This has implications for the implementation of a new portfolio system that introduces new calculation methods. If the old portfolio is handled by the new system, clients making payments may find the cashier indicating a different principal, interest, or penalty than they are accustomed to paying.

Because of the complexity and importance of loan portfolio management, an institution assessing software for this purpose needs to give careful consideration to the following areas:

- Product account numbering
- Disbursement policies
- Repayment scheduling
- Interest calculations
- Fee calculations
- Indexing issues
- Penalty calculations
- Links to savings
- Rescheduling and write-off procedures.

The rest of this section analyzes each of these areas, listing questions about the institution's policies and procedures and how they relate to the portfolio software's functionality. Comments in italics follow these questions where further clarification is of value.

These questions, numerous as they are, do not exhaust the areas that need to be examined. Thus the recommendation that such an assessment be done in coordination with technical experts from the software firm.

Product account numbering. How product accounts are numbered is both an important decision affecting the efficiency with which information is managed and an area of potential incompatibility with a portfolio system.

- Will a lead digit be used to indicate the type of account (loan, savings, term deposit) or product (group loans, rural loans, compulsory savings)?
  It is helpful to have a lead digit that indicates the type of product—for example, 1 for group loans, 2 for individual loans, 3 for savings accounts. More complex product schemes might need two digits—the first to indicate the product (savings account, loan), and the second to indicate the subproduct.
- Is it possible to incorporate a check digit?
  Account numbers will be constantly typed into the computer, with a great deal of room for mistakes. A check digit in the account number verifies the information entered by the typist. For example, in the account number 23406-5, the final digit is a check digit calculated by summing the digits of the account number (2+3+4+0+6 = 15) and dropping the tens digit (resulting in a check digit of 5). If the typist mistypes a digit, the check digit will no longer match and the number will be rejected. Sophisticated systems can weight the digits by their placement and thus capture data entry errors in which digits are reversed (for example, 24306-5 rather than 23406-5).
- What is the maximum number of accounts expected?
  Five digits, for example, allow up to 99,999 accounts.
- How will numbering series work for different branch offices?
  An institution with branches can assign different ranges of numbers to each branch. For example, branch 1 might start numbering at 00001 and stop at 29,999. Branch 2 starts at 30,000 and continues to 49,999 (being somewhat smaller than branch 1). Branch 3, being even smaller, has 50,000 to 55,000. Staff can identify which branch monitors a loan by the series.
- Is it possible to link the account number to the client number? Is it possible to indicate what loan cycle the client is in?
  An institution with a single financial product can use a single number as the client code and the account number. A sequence number can be added to show how many loans the client has had—for example, in NNNNN-CC, NNNNN is the client number and CC indicates how many loans the client has had.
- What will be the numbering format for individual accounts?
  A sample format would be TT-NNNNN-C, where TT is a code indicating the prod-

uct type, NNNNN is a sequential number within that product type, and C is the check digit generated by the computer for that account.

- Will numbers be assigned by staff or automatically by the system? If manually, how will the system allow for the correction of new account numbers entered incorrectly?

  If possible, numbers should be generated by the system, to avoid giving duplicate numbers to different accounts.

Disbursement policies

- In what form are disbursements made—cash, check, in-kind, combinations of these, or deposits into client checking or savings accounts?

  If several forms of disbursement are possible, this has implications for the links into the chart of accounts. A system is needed to indicate which form of disbursement is used for a loan. For example, a loan disbursed by check needs to be credited to the checking account, while a loan disbursed in cash needs to be credited to the teller's cash account.
- Are any deductions made from the approved loan amount? When are these deductions made? (See the section below on fee calculations.)

  A client typically does not receive the entire amount carried as the outstanding loan balance. Normally the microfinance institution assesses some up-front fees, deducted at loan disbursement rather than loan approval in case a client never collects an approved loan.
- Is the loan disbursed in a single transaction or in multiple tranches?

  Multiple disbursements require more complex programming—for example, to request the amount of the tranche to be disbursed and to compare the previous total plus the new tranche to the approved amount. Not all software packages support this capability.
- What approval or authorization is needed for disbursements? Are there preconditions to disbursements? How are these verified?

  A computerized system can aid in verifying that all procedures have been followed, but such functions require more complex software and potentially more customization of the source code.
- Does approval of a loan expire if the client doesn't collect the loan within a certain period? If so, how long is that period?

  For safety and security reasons, it is advisable to have loan approval expire within one month or less. The client's situation could have changed substantially, making reevaluation of the loan advisable. And expiration reduces the potential for staff embezzlement of uncollected loans.
- Is the credit product a line of credit, which allows disbursements and repayments at any point as long as the approved amount is not exceeded?

  Does the software allow for lines of credit, which need to be handled differently than other credit products?

Repayment scheduling. The software will need to be able to calculate the repayment schedule required. It is therefore essential to carefully analyze how repayment schedules are prepared.

- What repayment frequencies are allowed for the product—daily, weekly, monthly, end-of-term lump sum?
- What is the composition of installment payments? For example, are there some interest-only payments, and some interest and principal payments?
- Are installments the same or varying amounts?
- Are grace periods allowed between disbursement and the initial installment?
- How is the date of the first installment determined? Do the subsequent installments follow a regular pattern?
- How are payments allocated among principal, interest, fees, and penalties? Are staff able to override this automatic allocation?

  When repayment does not follow the original schedule or a client makes a partial payment, a systematic way to allocate the payment is needed. Normally the allocation is first to penalties, then interest due, then principal due, then interest accrued (but not yet due), then principal not yet due.
- Are there interest rebate schemes or other incentive plans to reward punctual or early repayment?

  Innovations such as these are unlikely to be handled by standard portfolio systems.

Interest calculations. Interest calculations are not as straightforward as they may first seem. Many minor factors must be considered to ensure that a portfolio system will behave as expected. Two main functions need to be verified. First, how are interest payments calculated in a standard repayment schedule, that is, when the client repays exactly as requested? Does the system generate a correct repayment schedule? Second, how is interest calculated when repayment deviates from the schedule? If the client pays early, is she charged less interest? If she pays late, is she charged more? If the client's repayment date falls on a holiday, is she charged more interest if she pays on the following day? The following questions raise some of the key issues relating to interest calculations.

- What method is used to calculate interest (declining balance, flat)?
- When is interest collected (with each repayment, at loan disbursement)?
- Is interest charged against loan principal only?
- What is the quoted interest rate, and for what period is it quoted (monthly, every four weeks, annually)?
- Are all loans in a product category charged the same interest rate, or is the rate established at loan approval?

  Some software packages require that all loans be charged the same interest rate.
- What authorization is required to set the interest rate on a loan? Is an audit trail kept?

  One potential area for fraud is alteration of interest rates charged on loans.
- Is the interest rate set for the term of the loan? Can it be adjusted at any point, or is it a floating rate pegged to an external index? How do rate changes affect the repayment schedule?

  Changing the interest rate midway through a loan can be problematic for most systems. As interest rates change, so will payment amounts.

- Is interest calculated on a 360- or 365-day year (or on another system)?
  The base number of days in the year affects the amount of interest charged.
- How is interest calculated if the client does not pay according to the repayment schedule?
  More accurate systems calculate interest on the number of days since the last payment. But many microfinance institutions simply charge interest for one payment period (one week or one month) even if the client is paying early or late.
- Are there grace periods on the calculation of interest? On the payment of interest?
- Is interest accrued on loans? If so, when is it accrued? Daily? At month-end? Is interest accrued on delinquent loans? At what point is accrual suspended or reversed?
- Is interest charged from the date the loan documentation is prepared or from the date the client comes to receive the disbursement?

Fee calculations

- Are up-front fees or commissions charged on new loans? Are they set amounts or percentages? On what base are they calculated? Does the percentage vary for loans of different size or is it constant? Is there a minimum or maximum limit on the size of the fee?
  For up-front fees it is normally best to have the system allow manual calculation and entry of the fees. That allows the greatest flexibility for changes in approach later.
- If there are multiple disbursements for a loan, are the up-front fees assessed on the entire amount or on each disbursement?
- Are ongoing fees or commissions charged on loans? How are they determined? Are they accrued?
  Ongoing fees generally should be automated, since they will affect so many transactions. Most standard software does not support automation of ongoing fees.

Indexing

- Are principal balances indexed to any external mechanism?
  The system will require a means to input the indexing factor and to convert balances and transactions appropriately.
- Are loans repaid in currency only or in kind as well? What accounting treatment is given to in-kind reimbursements?

Penalty calculations

- What qualifies a loan as delinquent?
- How are overdue interest-only payments treated?
- What method is used to calculate penalties (fixed amount per day, percentage charged to overdue principal, percentage charged to outstanding loan balance)?
- When is a penalty imposed (one day after the repayment day, or a certain number of business days after the repayment day)?

- If a grace period is allowed, does the penalty calculation go back to the repayment date or the end of the grace period?
- What procedure is used to decide whether to enforce the penalty or write it off? What level of authorization is required? Is an audit trail kept?

Links to savings

- Are savings accounts linked to loans?
- Is part or all of a savings account blocked (inaccessible) while the client has an outstanding loan balance?
- What are the conditions for unblocking savings (loan must be fully repaid, savings can be used for final loan payment, loan must be on time, savings balance must exceed a certain percentage of the loan balance)?
- Must the savings be on deposit before loan approval?
- Is part of the approved loan held back in a savings account?
- Are additional savings required during the loan term? Are the required savings a set amount or a percentage of the loan repayment?
- Can overdue loan payments be drawn from the savings account? Under what conditions?

An institution looking for a low-cost, flexible system should not expect to link accounting software with the portfolio system

Rescheduling and write-off procedures

- What procedures are followed to reschedule a loan?
- What happens to outstanding charges, penalties, and interest when a loan is rescheduled? Are they capitalized into the new loan principal balance or written off?
- At what point is a loan written off?
- What authorization process is required to write off a loan? Is an audit trail kept?
- Does the portfolio system continue to track written-off loans in an off–balance sheet account?

Linking accounting and portfolio systems

Many people expect a computerized portfolio system (which tracks individual client accounts) and a computerized accounting system (which tracks activity at a more aggregate level) to be seamlessly linked—so that all transactions entered in the portfolio system are automatically reflected in the accounting system. While computer software and operating systems have made linking portfolio and accounting systems easier, it is expensive and the link requires maintenance. An institution looking for a low-cost, flexible system that does not require programmer maintenance should not expect to link accounting software with the portfolio system.

Client accounts and the accounting system are "linked" through accounts on the general ledger. The total loan and savings balances in the client accounts should match the balances in the corresponding general ledger accounts. Because the client account balances sum to match the general ledger balances, the client accounts and the general ledger should be periodically reconciled (at least monthly) to ensure that proper information is being recorded in both.

In a noncomputerized institution reconciling client accounts with the general ledger is painstaking because the client account balances must be summed from paper records, such as ledger cards. In an institution with computerized client accounts the task of adding client account balances is easily performed by the computer, but identifying discrepancies and establishing adjustments still make the task unpleasant. For this reason many people prefer a seamless link between the client accounts and the corresponding general ledger accounts.

But small institutions are probably better off not linking client accounts and the general ledger by computer. A nonlinked system provides another level of internal control, offers more user flexibility and less computer dependence, and is less expensive because it does not demand additional programming or software support. The accounts could run on a separate, inexpensive accounting package, and the client accounts on a programmed database. A transaction report could be printed from the client accounts program detailing the loans disbursed, loan payments received, journal vouchers adjusted, and savings deposited. The totals and the individual transactions could then be reconciled with the accounting transactions and the original paper slips. These procedures could be performed daily for greater reliability of client account data, with any irregularities identified and resolved on the day they occur.

A nonlinked system provides another level of internal control, offers more user flexibility, and is less expensive

5.2.2 Step 2: Completing the design

At this point the MIS project team will have determined conclusively whether it is purchasing an off-the-shelf program, modifying an existing program, or developing a new, custom package for each module—accounting and portfolio management. Having worked carefully through all the details for each module, the team is prepared to oversee the production of a system design document. This document should include the following information:

- Description and flowchart of how the basic data will be entered and stored
- Description and flowchart of all staff required and their duties
- Description and examples of all printouts and reports that will be generated by the system
- Definitions of all indicators generated by the system
- Detailed list of all functionality required by the system for the financial products
- Description and flowchart of the flow of information and reports through the system
- Description of internal control and confirmation procedures for the information flow
- Security procedures for user access and data backup.

5.2.3 Step 3: Finalizing the MIS plan

The team should present full details on the system specifications to the users for their approval. It should also develop a detailed plan for implementing the system, including a schedule and budget. Senior management should approve the plan, authorizing the necessary monetary resources and staff hiring.

5.3 Phase 3: System development and implementation

Phase 3 can be the longest of the phases, depending on the choice made in phase 2. Developing and testing software, whether to modify an existing program or create a new one, can take much time. Installation and data transfer can also be a lengthy process, depending on the size of the institution.

The steps in this phase need not be sequential, and each step can take much time. So, where possible, the steps should overlap to minimize the total time required to develop and implement the system. The order, timing, and duration of the steps should be detailed in the project team's MIS plan.

The steps in the development and implementation phase
1. Developing the software
2. Setting up the hardware
3. Preparing and revising documentation
4. Configuring the system
5. Testing
6. Transferring the data
7. Training
8. Running parallel operations

5.3.1 Step 1: Developing the software

Modifying an existing program or developing a custom package will require a software development phase that can last anywhere from a week to a year. It is important to have a clear plan detailing the stages of software development and scheduling early and frequent opportunities for user feedback. As development proceeds and issues and limitations become clearer, the design parameters defined in phase 2 may need to be revised.

5.3.2 Step 2: Setting up the hardware

Setting up the computer hardware for a new system can be time-consuming, and it requires much anticipatory planning, especially in purchasing decisions. In addition to selecting and purchasing the computers, printers, power supplies, backup units, software, cabling, and other peripherals, plans should cover:

- Electricity supply, including grounded connections
- Backup power supplies
- Telephone connections
- Installation of network cabling
- Temperature, dust, and humidity control
- Remodeling of work areas, especially teller counters
- Server and terminal security and access
- Structural security against theft
- Fire extinguishers.

5.3.3 Step 3: Preparing and revising documentation

As the design of the system is completed and development gets under way, work can proceed on system documentation. Good documentation can be invaluable in ensuring proper use of the system, especially in large, decentralized organizations or in organizations undergoing expansion. It can also serve as a training tool for new staff and assist staff in dealing appropriately with new situations.

Documentation on policies and procedures will need to be revised to reflect changes introduced by the new system, and new documentation on the system will need to be developed (see box 5.1 for areas requiring documentation).

5.3.4 Step 4: Configuring the system

Most software installed in more than one institution uses configuration options to set up the system for an institution's needs. Configuration options are generally menu-driven and accessible by a user registered at the level of system administrator. Less commonly used configuration options are enabled by special codes entered into a configuration file by a technician familiar with the software.

Configuration consists primarily of:

- Setting up the structure of the chart of accounts. This crucial task may require modifying the institution's chart of accounts to match the operations of the software package.
- Defining the financial products, each with myriad rules—such as minimum and maximum amounts, interest calculation methods, links between accounts, and treatment of delinquency for loans. If the software is sophisticated, the list of options can be long (see section 5.2.1).
- Establishing numbering conventions for clients and loan and savings accounts.
- Establishing relationships among branches—for example, for sharing and consolidating information.

Independent cross-check audit routines should be developed

5.3.5 Step 5: Testing

The next step is to test the system with actual data. Historical information for the past several months on 50–100 accounts for each product type should be entered into the system.

This testing phase serves two purposes. First, it allows the development of a strategy for data conversion or entry of initial data for all active accounts (see section 5.3.6). Second, it allows careful study of the system's behavior:

- Are repayment schedules, interest charges, penalties, and delinquencies being properly calculated?
- Does the system crash inexplicably?
- Does the network function adequately?
- Does the system allow correction of data entered in error?
- Is the system user-friendly, or are there urgent issues that need to be addressed?

Independent cross-check audit routines should be developed that verify that the system is operating properly. These routines should perform checks for empty data fields, data outside minimum and maximum ranges, sequential numbering, duplicate account or client numbers, duplicate records, widows and orphans (records in a database table not matched by records in other database tables), and accuracy of interest, penalty, and delinquency calculations. Many errors occur in databases, as a result of software bugs, database corruption, and data entry errors. Without such an audit routine, data errors become frequent, undermining staff's confidence in the system.

Data transfer is one of the biggest unknowns in an MIS installation

5.3.6 Step 6: Transferring the data

Data transfer is one of the biggest unknowns in an MIS installation. It requires careful and deliberate decisions and guidance, preferably from an expert who has been through this minefield before. When installing commercial software, it is best to obtain advice from a technician familiar with the system. There is great potential for disaster—the wrong decision can mean weeks of lost time because data need to be rekeyed, or months of frustration because balances and calculations bear no relation to reality.

The first issue is simply volume. Introducing names and socioeconomic data on clients is time-consuming. The information may be computerized, but there are usually incompatibilities between the old and new MIS in the type of information required or the format in which it is stored. While it is often tempting to transfer incomplete data electronically and then enter the missing data manually, this approach requires more attention from a technician and can be costlier than simply assigning lower-cost data entry people to enter all the data manually.

Financial data are an even bigger problem. The data in most microfinance institutions are flawed, sometimes seriously. Installing a new MIS then becomes an exhaustive auditing exercise—not a bad thing, but it adds substantially to the cost of the MIS. Initial balances in the general ledger need to be matched with the detailed subledger balances for all savings and loan accounts. Financial data should be entered in small batches of fewer than 50 accounts. The totals for the batches need to be checked manually against hard copies from the old system and compared with computer-generated listings from the new system.

A third common issue, and the most serious source of problems during data transfer, is incompatibility in loan treatment between the old and new systems. The new MIS needs to treat a loan midway through repayment predictably—an institution can't simply change its policies midway through a contractual arrangement. But the incompatibility is sometimes unresolvable. Institutions with fairly rapid loan turnover (say, less than six months) might be best off using the old system to track outstanding loans until they are repaid and entering only newly approved loans in the new portfolio package.

Predicting how long or how difficult data transfer will be is difficult, even with a careful initial assessment. But this example gives a rough idea of what can be involved: An MIS installation in an institution with 4,000 clients and about 10,000 accounts (savings, loan, and share accounts) required about 12 staff weeks to enter data. Four staff did the work, so the process took three calendar weeks of intensive effort. It required nearly full-time supervision by a technician familiar with the software.

5.3.7 Step 7: Training

A full-featured MIS is complex, and its implementation requires big shifts in an institution's operating procedures. So its installation must be coordinated with extensive training for all staff. Training normally takes one to two weeks of the trainer's time, depending on the system's complexity and the number of staff to be trained.

It is important to run the new system in parallel operation with the old one

Users should be divided into training groups, usually by department. The training for each group should focus on issues most relevant to its area of operation, but all users should receive a good overview of the system's general operations. The duration of training varies, depending, again, on the system's complexity and on the staff's experience with similar systems. It is best to break training up into daily sessions of one to two hours.

The training curriculum should include the following:

- System setup, maintenance, and backup
- Opening and closing client accounts, and altering and correcting client information
- Savings and credit transactions
    - Approving and disbursing loans
    - Opening savings accounts
    - Receiving payments and deposits
- Correcting transactions recorded in error
- General ledger transactions
- Use of specialized modules (accounts receivable, accounts payable, investments, payroll, fixed assets)
- Daily, monthly, and annual closings
- Statement and report generation
- Use of report writers
- Security and internal control procedures
- System restart and data recovery procedures.

5.3.8 Step 8: Running parallel operations

It is important to run the new system in parallel operation with the old one, to ensure that the new system runs reliably and that its calculations and processes are accurate and compatible with loan contracts. The institution may need to contract additional personnel during this stage or to retain temporary staff who might have been hired for the data transfer.

During the parallel operation staff should enter as much data as feasible into each system and carefully compare the outputs. Any discrepancies should be evaluated and accounted for. Any errors or bugs in the new system should be carefully documented and corrected.

The parallel operation should generally continue for at least two months, so that nearly every client will have made at least one payment and the system will have gone through two month-end closings. Once the institution is satisfied that the new system is performing well, the old system can be discontinued, but all printouts and data files should be carefully stored for future reference.

The software firm's responsibility does not end with the installation

5.4 Phase 4: System maintenance and MIS audits

The software firm's responsibility does not end with the installation. It must provide reliable and timely support to the microfinance institution, to ensure that if the system does go down, it does not stay down long. Internationally supported software will have a technical support unit in a country only if it has a substantial market there. If not, support will be provided by email, phone, and fax. The alternative for an institution using international software is to employ someone with strong technical skills or to contract with a local software consulting firm that can provide ongoing support.

The cost of support will depend on the system's stability and reliability, with a relatively new system that has not been thoroughly tested requiring much more support. The cost will normally decline as the microfinance institution grows more experienced with the MIS and thus more capable of solving problems. The cost of revisions and modifications needed as the institution evolves and changes its procedures usually is not included in charges for support. Firms will charge additional fees for upgrades of the source code and for customized modifications.

Finally, regular reviews of the program—MIS audits—will be needed to ensure that the system continues to function properly, reflects the institution's current policies and procedures, and meets its information and management needs. A review is recommended once every three years.

Notes

1. This chapter draws on Graham Perrett, "Outline for Designing a Financial Management Information System" (prepared for Freedom from Hunger, 1996) and on internal documents prepared by Peter Marion for FINCA International.

2. Although *reengineering* is sometimes used interchangeably with *downsizing,* what the initial proponents of reengineering meant by the term was the transformation of business processes to take advantage of new technologies. The goal was to empower staff to make decisions by increasing their access to information and streamlining bureaucratic procedures. See Michael Hammer and James Champy, *Reengineering the Corporation* (HarperBusiness, 1993).

3. Having a solid information systems department is not the only critical staffing issue for computerization. The accounting department must also have a high degree of com-

petence. An information systems department can keep a system running, but only the accounting department can ensure that the information in the system is up to date and accurate.

4. For reasons explained in section 5.2.1, it is much easier to find a good off-the-shelf accounting package than it is to find a good portfolio package.

ANNEX 1

An Introduction to MIS Software and Technology

The central premise of this handbook is that there are three keys to successful development of a management information system. This annex addresses two of them: effective communication between management and systems people and realistic expectations about information technology. The annex is intended to give managers considering computerized information systems the technical information they need to communicate effectively with systems people and to make appropriate decisions about computerization.

Moving to an automated system

A medium-size to large microfinance institution expecting to grow can take several different approaches to automation of its management information system. It can use an entirely manual system, though this is not recommended. It can computerize only its accounting system, using one of the many solid software applications available. Or it can computerize only its head office operations, using manual systems in its branch offices to hold down costs, to avoid needing technical staff in the branches, or because branch offices do not have reliable electricity or do not have a sufficient volume of activity to justify automation. But systems in which manual records are transferred to the head office for inputting are often characterized by significant data entry errors and delays in producing information. Microfinance institutions of any significant size should give serious consideration to full computerization of their MIS, at both the head and branch offices. Moving to a computerized system can be a gradual process (box A1.1).

Planning a computerized information system is complicated by the rapidly changing computer industry, with computer firms entering and leaving the market quickly. What are the choices for microfinance institutions seeking solutions for client portfolio and accounting needs?

The computer environment and architecture a microfinance institution requires depend on its cost of operations, its methodology for delivering financial services, its institutional goals and vision, its organizational structure, and its information flows. These factors will determine whether an institution should choose a single, back office computer or a networked system (see the section below on computer networking). Computer technology can offer a whole new approach to serving clients, making new options in delivering services possible. So it is important to think “outside the box” and to work with a consultant or information systems staff when deciding which computer applications best fit an institution’s needs and circumstances.

BOX A1.1

Making the transition to a computerized system: How FECECAM did it

FECECAM is a network of 90 local credit unions in Benin. In 1993 the network served about 80,000 clients, and the local credit unions performed all the accounting and portfolio tracking manually. But FECECAM then began gradual computerization. The regional offices adopted a standard chart of accounts, assembled data from the local credit unions, and passed those data on to the national office. As each local credit union grew beyond 2,000 clients, its accounting and portfolio systems were computerized, using front office systems that allowed tellers to access the database as they served clients.

By 1997, 30 of the local credit unions were fully computerized. The other 60 still use manual systems, sending information to the regional offices to be entered into the computer database.

The network's strategy of gradual computerization—standardizing data while automating local credit unions when their activity levels justify it—has been a successful one. It is providing valuable information for the organization at all operating levels and improving the efficiency of operations.

The choices are complex and dynamic. But some basic principles may help to alleviate some of the confusion:

- Tools such as databases are always improving, but that does not mean that an institution should postpone development of a system until a new, improved version is available. Upgrades will always be necessary and should be included in capital planning. But no institution needs to upgrade its system every year. Instead, as with other investments, institutions should upgrade and expand their system when the benefits justify the costs in purchase price and staff retraining.
- Personal computers too are always improving. They are far more powerful today than they were five years ago—and less expensive. But again, an institution should not put off purchasing a system. Today's personal computers have more than enough computing power for most microfinance institutions.
- Reliable technical support for computer hardware and software is critical. It is vitally important for microfinance institutions to invest in personnel with good technical skills and the ability to give good advice.
- Basic management techniques should be applied to computerization, just as to any other area of business. It is important to define the outcomes: Where is the institution going, and how will it know when it gets there? What objective measures can be used to assess productivity growth, cost reduction, and improvements in services and processes? The desired results and the database design specifications should be documented to keep the programmers accountable.

Computer databases

Managers and those involved in system design need a basic understanding of database design so that they can communicate effectively with programmers and system analysts during the design process. They also need to understand the implications and constraints involved in changing the database structure in the future.

Databases are the most appropriate computer tool for storing and reporting the financial information that microfinance institutions use. They operate well in an institution that depends on a high volume of information and with historical or time-based information. They can generate complex reports from a large data source. Most important, databases create functional information systems. They organize information in a system according to its elements (such as scheduled and actual loan payments) and the relationships among those elements. The database structure maintains these relationships through key variables.

Another important characteristic of database systems is that they require clear-cut rules that are always enforced in procedures. An organization that has operated according to subjective decisions or rules may have difficulty adapting to this style of work.

The following section describes how databases are structured. For microfinance institutions designing a custom database, an excellent starting point is to study the data file structures of one of the commonly available software packages to identify important information needs (see annex 4 for a list of some of these packages). Institutions contracting with a programmer or business to develop custom software need to be aware of some key issues in such software purchases (box A1.2).

The parts of a database

A database has five basic parts: tables, forms, queries, reports, and programming commands. Tables store data; forms allow users to enter, edit, and view data; queries search and report data; reports describe the format for paper or screen output; and programming commands make it possible to customize a database to fit a particular system.

Tables provide the foundation for the database. The tables' structure and their relationships to one another are referred to as the database structure. The database structure defines what information can be stored in tables. It also defines and maintains the relationships between tables. Thus the database structure is like the foundation of a house because all the forms, queries, and reports are based on it. And it is like a road map for connecting data because the forms, queries, and reports all refer to it to store or retrieve information. If the database structure is poorly designed, users will have trouble storing or retrieving information. If the database structure is altered because of changes in user requirements, forms, queries, and reports will probably also have to be changed.

Essentially, the database structure is an interpretation of the system design and the user requirements. The database programmer uses written descriptions and diagrams of the system design and users' needs to formulate a structure that will deliver the information the users want. For this reason it is critical that institutions take the time to fully analyze the system and document the system design

BOX A1.2

Recommendations for choosing database software

- Before selecting a programmer or a company, always check with several previous clients. Are they satisfied with the software packages they purchased? Was the program developed in a timely fashion? Does the programmer respond quickly to routine maintenance and emergency calls?
- Whenever possible, purchase database software already in use in several other institutions, even if modifications and additions are needed. Having a system built around the core of an existing program greatly increases the probability that the system will function well. If purchasing a system already in use, be sure to spend adequate time reviewing how the program works and checking with users about their satisfaction with it.
- Expect that no software program will ever run perfectly smoothly. Because of the complexity of computer programming, even the most widely distributed programs have problems (or bugs). Programs consist of many independent sections of code, each of which runs only under specific conditions. A section that contains an error may be run only rarely, bringing an apparently well-functioning system to a standstill (for example, at year-end, when special functions are performed).
- Recognize that what the institution purchases is generally a license to use the software, rather than the software itself. This has ramifications. An institution that purchases a software license can expect to remain dependent on the original programmer long after the program is installed. The reason is that most programmers do not sell the program's source code. They provide a running copy of the program, called a compiled version. When the original programmers or the companies that sell the software licenses retain the source code, only they can make corrections or modifications.[1]
- When determining the price of the system, be sure to discuss what future costs are likely to be incurred beyond the original purchase or licensing cost. Future additions, modifications, and even corrections of errors in the original program are often billed to the client at high hourly rates, significantly increasing the software's total cost.
- Don't take everything a programmer says at face value. There are no set answers. Thus the advice programmers give is often influenced by their preferences rather than the institution's needs. They may favor a particular programming language. They may recommend a networked system that will result in a higher sales price for them when a single-user system would be adequate. So try to get several opinions. And if possible get expert advice from a disinterested party who is not bidding for the system.

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1. Programmers make the changes to their copy of the source code and then recompile the program to produce a new executable version for the client. Programmers and software companies protect their source code because it represents their livelihood; the intention is to prevent others from modifying or selling the program. Sometimes a client can obtain rights to the source code, although when purchased through an outside consultant, that normally means a higher price and contractual requirements not to distribute the source code to others. Where contractual agreements and copyrights are weak, few programmers are willing to agree to this arrangement. (A more likely way to obtain the source code is to hire the programmer.) Even having access to the source code does not guarantee that other programmers will be able to correct or modify a system. The only person who really understands the programming logic is the original programmer.

and requirements. It is also critical to involve as many users as possible in the process, to reflect the many different perspectives that people have of the system.

Sample database structure

To explain database structure, it is helpful to model a simple loan tracking system. The designers of this system identified four basic elements—client, loan, loan schedule, and loan payments—and identified the information they wanted to store and retrieve for each.

- Client: a person receiving a loan
  - name: the name of the client
  - address: the address of the client
  - gender: male or female
  - birth date: the date of birth of the client
- Loan: the loan disbursed to the client
  - loan amount: the amount of loan the client receives
  - annualized interest rate: the annualized interest rate of the loan
  - number of payment periods: the number of periods the client is given to repay the loan
  - type of payment period: month, week, and so on
  - type of interest calculation: flat or declining balance
  - date of disbursement: the date the money is given to the client
  - check number: the number of the check given to the client
- Loan schedule: the payment schedule for the client's loan
  - date: the date the scheduled payment is due
  - amount of principal: the amount of principal that is due
  - amount of interest: the amount of interest that is due
- Loan payments: the actual payments the client makes on her loan
  - date: the date the actual payment is made
  - receipt number: the receipt number for the payment
  - amount of principal: the amount of the payment allocated to principal
  - amount of interest: the amount of the payment allocated to interest

The information under each of the elements describes the element. The client is described by his or her name, address, gender, and birth date. The loan schedule is described by the date a payment is due, the principal due, and the interest due. The information also describes one record of information at a time. This is shown by displaying the information in a chart (figure A1.1). Each row of the chart holds information pertaining to one record, while each column represents the data field. This is how database tables store information.

How does a database programmer go about creating a database structure? The programmer first analyzes the system requirements and then develops a structure

FIGURE A1.1

How a database table stores information

	Name	*Address*	*Gender*	*Birth date*
Record 1	John Mengi	Box 1089, Moshi	male	17 May 1954
Record 2	Rose Swai	Box 114, Moshi	female	2 Jan 1955

through a process called "normalization." That is, she attempts to break data down into the simplest form and create a structure that minimizes the necessary data, avoids duplication of data entry, and facilitates storage and retrieval of information.

For the sample database the programmer decides that the database structure will consist of four tables following the layout in figure A1.1. She decides to break down the client information to allow easier sorting and retrieval of information. She creates two data fields for the client name: *namelast* and *namefirst*. She also breaks the address into two data fields: *boxnumber* and *city*.

After identifying and creating the data fields, the database programmer decides how to relate the tables. From the design document she learns of the following relationships:

- A client can have many loans over time.
- A single loan may have many actual payments over time.
- A single loan may have many scheduled payments over time.

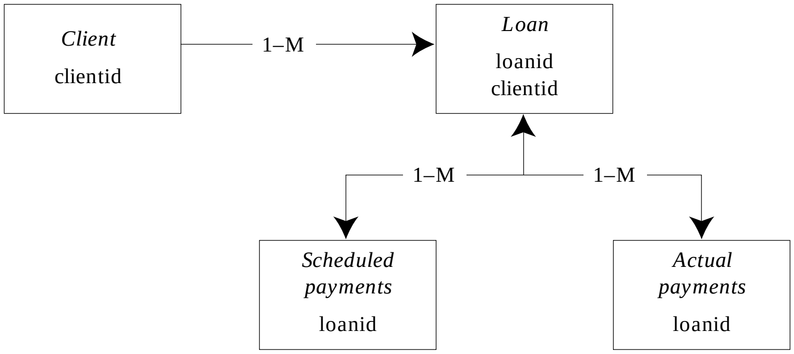
With these in mind, she diagrams the relationships between the four tables in the system (figure A1.2). The number of records from one table that are related to records from another is indicated by the labels on the lines connecting the tables.

- Client-loan: One client can have multiple loans, related by a *clientid* field. This is indicated by the 1–M (one-to-many) label on the line connecting the two tables.
- Loan–actual payments: One loan can have multiple payments, related by a *loanid* field.
- Loan–scheduled payments: One loan can have multiple scheduled payments, related by a *loanid* field.

To express and maintain these relationships, the database programmer creates key data fields and indexes. An index is a special file that facilitates the sorting and retrieving of information. If the indexes become corrupt or are deleted, the table sorting cannot be maintained, the relationship to other tables is compromised, and the database structure becomes unstable and sometimes inopera-

FIGURE A1.2

Relationships between the tables in the sample database



ble. Our database programmer has created two key data fields: *clientid* and *loanid*. By placing *clientid* in both the client table and the loan table, the database programmer has linked the fields without having to duplicate the client name in the loan table.[1] The tables are now finished (figure A1.3).

The programmer then creates forms and links them to database tables to facilitate data entry, viewing, and editing. She designs queries for reporting information. She creates reports according to the formats agreed on in the design stage. And she writes programming code according to the agreements on information flows, data controls, and decisionmaking. After creating a prototype version of the database program, the programmer provides a demo and seeks feedback on the basis of the design documents. After further refinements, the final database program is field-tested.

Once the database structure is set, it becomes difficult to alter, especially if much progress has been made on forms, queries, reports, and programming commands. Even a seemingly small change in institutional practice can require radical changes in the database design—changes that are costly and time-consuming. Consider, for example, an organization that decides to offer group lending six

FIGURE A1.3

The tables in the sample database

Table name	*Field name*	*Field type*	*Size*	*Indexed*	*Description*
Client	clientid	text	10	yes	sorting/maintain relationship
	namelast	text	30	yes	last name
	namefirst	text	15		first name
	boxnumber	text	30		box number of address
	city	text	20		city address
	gender	text	1		female (F)/male (M)
	birthdate	date			date of birth
Loan	loanid	text	10	yes	sorting/maintain relationship
	clientid	text	10	yes	sorting/maintain relationship
	loanamount	number	9		amount of loan
	rate	number	4		annual interest rate
	periods	number	3		number of payment periods
	typeperiod	text	10		type of period (month)
	typeinterest	text	17		type of interest (flat)
	datedisb	date			date loan disbursed
	checkno	text			check number
Loansch	loanid	text	10	yes	sorting/maintain relationship
	date	date			date of scheduled payment
	amtprins	number	10		amount of principal
	amtints	number	10		amount of interest
Loanpay	loanid	text	10	yes	sorting/maintain relationship
	date	date			date of actual payment
	receiptno	text	5		receipt number
	amtprinp	number	10		amount of principal paid
	amtintp	number	10		amount of interest paid

months after installing a database. Since group lending had not been included in the original database design, it cannot be handled in the current database structure. To manage group loans, a group loan table must be created and linked to the client table. New forms need to be created, and existing forms altered. Queries have to be changed, report formats redesigned, and new reports created. Finally, the programming code has to be altered to support new information flows and decision processes. These changes will cost the organization time and money that could have been saved with greater foresight.

Computer networking

A microfinance institution introducing or increasing the use of computers can choose among four main types of personal computer architecture: a stand-alone computer, multiple computers in a peer-to-peer network, multiple computers in a server-based local area network, and a wide area network that connects computers in distant locations.

Networking—linking computers to enable them to share information and resources—brings many advantages but also adds complexity. Many institutions might be concerned about installing networks, considering them both expensive and heavily dependent on technical support. But computer networking technology has advanced rapidly in recent years. In the past running a DOS-based network required special network software, such as Novell or LANtastic. Today's operating systems allow the user to run simple networks and reduce dependence on technical assistance. It is possible to link two computers using only Windows 3.11 or Windows 95. Networking on operating systems also includes many extras—such as email and scheduling software—all on one system.

Stand-alone computer

Single, nonnetworked computers are the most common computer architecture in microfinance institutions. Even if an institution has more than one computer, the computers are rarely linked. Instead, information is passed through diskettes and often stored in multiple locations, decreasing information efficiency. A microfinance institution could easily use a single computer to store client account transactions and balances for as many as 1,000–2,000 active loans. Branch offices with small volume should normally use a stand-alone computer.

Peer-to-peer network

If a microfinance institution has more than one computer and is operating Windows 3.11 (or a higher version of Windows), there is little reason not to create a simple peer-to-peer network. In this environment computers are linked through network cards (placed in the computer) and cables. A user on one computer can access nonsecure information on another even while someone is using that computer. A user can also be prevented from accessing secure information on another computer. And controls can be set to allow users to edit information, to add information, or to only read information.

This simple network brings benefits in information efficiency. Often, many people need access to information at the same time. Managers might need to review a client's loan history while the computer operator is entering a collection report. In a networked system the manager could access and view the client account database at her own computer. Critical information is stored in one place, but is available to everyone who needs it. But when more than one person could modify information for a client, networking requires sophisticated programming to ensure data integrity.

The peer-to-peer approach is not recommended for a microfinance institution that plans to grow, but it could be a good choice for small microfinance institutions that want the benefits of networking.

Server-based local area network

Growth-oriented and large microfinance institutions could increase efficiency by using a server-based local area network, or LAN. A server is a personal computer that is equipped with a faster processor, more memory, and more hard disk space than a stand-alone computer in order to handle more activity and store more information.[2] Network cards and cables connect the network server to individual computers to allow them to access information (such as client accounts) stored on the server. The security of information is typically ensured through network software and the database application.

Wide area networks

Local area networks link computers in the same building, by cable. Wide area networks connect computers by phone line. An example of this kind of network is an airline reservation system, which allows independent ticket agents to access the same data. Such "real-time" wide area networks are beyond the technical and cost capabilities of most microfinance institutions. The best alternative for transferring data is to send the data by modem at the end of the day for incorporation into the main database. Data could also be sent weekly or monthly by diskette, but that would delay aggregate reports. Neither of these alternatives is technically a wide area network, but they work adequately, although they limit the ability to serve clients at branch offices other than their own.[3]

Choosing a networking option

A microfinance institution's operating environment—the size of operations, the cost of operations, and the method of delivering financial services—should drive its choice of networking options. Four examples show how microfinance institutions with different operating environments have used computer technology in different ways, some more exciting than others.

- *Back office environment.* A small microfinance institution conducts its client transactions away from the branch office in a marketplace, a commercial bank, or a rented schoolroom. Loan officers record the transactions on paper collection forms or receipts, which they take back to the branch office. There, the information is recorded on a single computer in a back room.
- *Mobile environment.* Loan officers conduct client transactions in marketplaces. Working in pairs, the loan officers go to four different markets. When they complete a transaction, they record it using a laptop computer rather than a paper form—entering it directly into the client account system. After banking hours end the loan officers return to the branch office, plug their computers into the branch's main computer, and "upload" their data from the day's transactions. The branch's main computer then compiles the day's transactions and prints reports.
- *Teller environment.* Client transactions are carried out at the branch offices by one of many tellers, and each branch runs independent from the others. This microfinance institution uses a local area network with software that allows tellers to view client accounts in the database and to enter information directly into the database as they serve clients. The software allows users to access any computer to process transactions or create reports.
- *Wide area environment.* A microfinance institution operates in a large urban center with reliable communications. The institution has a head office and many small branches throughout the city. Each branch office has a single computer for processing client accounts. The branches handle client transactions and petty cash expenses, but the head office performs full accounting functions. During the day the branch offices record transactions in the client account system. At the end of the day they upload their information to the head office by modem.

Operating systems

A few large microfinance institutions may use UNIX-based mainframes and operate on a wide area network. (These institutions usually have an information technology department with many computer support staff, and this handbook is not written with them in mind.) But most will use IBM-compatible personal computers (PCs) to manage their information. For personal computers there are basically four operating systems: DOS, Windows 3.x,[4] Windows 95, and Windows NT.

DOS

Although several software companies provide DOS operating systems, most of the DOS market is served by Microsoft (whose systems are referred to as MS-

DOS). DOS has been the dominant operating system for more than a decade, but it has severe limitations for use with today's hardware technology. DOS will never be able to go past a basic memory limit of 640 kilobytes. Installing additional memory does not get around this limitation. And DOS will never be able to use the power of today's 32-bit processors (486 and higher). Thus while DOS is still used in many computers around the world, it does not have a future. The operating systems of the future are those that use 32-bit technology and do not have the memory limitation, such as Windows. Software companies will no longer develop applications for the DOS market, and technical support will become difficult to find.

Windows 3.x

Windows 3.x is a graphic user interface for DOS. It is positioned between DOS commands and the user to create a more visual environment in which it is easier for the user to operate. DOS still runs the machine, but Windows makes the user think Windows is doing it because that's what the user sees. Windows 3.x allows users to operate several applications at the same time (multitasking). Windows 3.11 is a tried and tested graphic user interface and is still a solid performer, with many applications developed for it. But because Windows 3.x is tied to DOS in 16-bit architecture, its future is limited. Windows 3.x will run adequately on 386 machines with 8 megabytes of RAM (random access memory—what software needs to perform tasks), so it is an attractive operating system for institutions with older hardware.

Windows 95

Windows 95 is a step toward the operating systems of the future, but its weakness is that it provides "backward compatibility"—compatibility with the PC applications of the past. Microsoft could not come out with an entirely new operating system on which many DOS applications would not operate. So instead it created a hybrid operating system that runs DOS applications, Windows 16-bit applications, and Windows 32-bit applications. Windows 95 is the bridge to another operating system that will sever ties with the DOS world. A microfinance institution purchasing new computers will find Windows 95 on them. Thus Windows 95 is the most appropriate choice for microfinance institutions today, but it requires a 486 machine with at least 16 megabytes of RAM to run adequately.

Windows NT

Windows NT is becoming the operating system of the personal computer network and is beginning to rival UNIX in operations (UNIX was the standard operating system for mainframe computers and thus the standard for the business world before the advent of the PC). Windows NT overcomes the weaknesses of Windows 95 by not incorporating backward compatibility. Because it is a true 32-bit operating system, requiring the newer-generation 32-bit applications, it is less prone to system "crashes" than the other operating systems. Combined with personal computers running Pentium processors, Windows NT is a cost-effective option for large microfinance institutions considering a network. It has good security options and, if applied appropriately, could enable institutions to take advantage of new software technologies for server-based networks.

Security

In a computerized information system *security* means protecting data, restricting user access, and limiting fraud through control routines. Security does not guarantee that fraud or data loss will not occur; it only seeks to minimize it. In a sense, it is a form of risk management. A security system may not prevent an accountant from setting up false client accounts and running a pyramid scheme. But it will make it more difficult for the accountant to do so—and easier for an attentive manager to spot the irregularities. Security features do not act alone. Effective fraud management results from a combination of MIS security features, internal controls, and accountability from management.

There are two main types of threat to information on computer systems and thus two main types of security:

- System security—to secure data and user routines (such as loan disbursement, loan payment, and account adjustments) from unauthorized use
- Data security—to prevent loss of data or information as a result of hardware failure, index failure, or other causes.

System security

System security focuses on allowing only authorized users to gain access to specific system functions, usually by requiring users to enter a password. It also involves preventing knowledgeable computer users from gaining access to base information in the database tables.

Database tables can easily be compromised if the data in them are not encrypted. Even a novice computer user with elementary knowledge of databases can access data if they are not stored with encryption or if the tables do not have password protection. That person could then enter false payment information and change an account's status.

There are several ways to prevent unauthorized access to client accounts. First, database programmers can deter users from viewing or manipulating table data by encrypting important financial information and using passwords. But encryption slows database performance because of the extra computations performed by the microprocessor. Second, some new database programs have created table-based passwords so that users cannot open a database table unless they enter the password for the table. Third, data in a table can be stored normally and be available for viewing, but an additional field can be added to the table containing an encrypted validation code, or check sum, for the information in the record. If anyone alters the information in the record, such as by changing a loan balance or an interest rate, the check sum will no longer be valid and the system can detect and flag the violation.

Database programmers also employ system-level and user-level password protection to prevent unauthorized users from using a system. With system-level password protection, the program requests a general password when a computer user signs on. If the user is unable to provide the correct password, the system quits.

User-level passwords, associated with a user's name or with a position, can be combined with system-level passwords to provide both general and specific methods of control or used as the only method of password protection. User passwords associated with either the name of a person or with a position can be used to restrict a user to certain types of program operations or functions. For example, a password associated with the position of cashiers and allowing a low level of access could be used to prevent cashiers from approving loan disbursements or adjusting loan balances. A pop-up message could be created to inform users that their access level is too low. Users' access can also be controlled by having the options users see on their computer screen depend on their access level.

Each of these options is equally useful; which is best for an institution depends on its structure. Position-related passwords are useful in organizations in which job functions are specific to departments. User name passwords are better for more task-oriented environments.

User passwords can be used not only to prevent unauthorized access, but also to document an audit trail showing which user performed certain financial transactions or approved a particular decision. A system can create an audit trail when saving financial transactions, for example, by also saving data entry information such as user ID and time and date entered. Control reports can then be printed to show managers who entered which financial transaction. Audit trails are helpful when tracking possible fraud. And users tend to act honestly and to be more protective of their individual passwords if they know the information they enter produces an audit trail. Audit trails should be generated for:

- All financial transactions (loan payments, deposits, withdrawals)
- Client account adjustments (journal vouchers)
- Client account functions (opening or closing a loan account)
- Approvals registered in the database (loan approvals).

How many access levels should an institution have? That depends on the number of functional areas identified in the database design document. There could be a single access level for loan disbursement—or several, with each defined by the amount to be disbursed. A branch with four functional job areas might have four access levels: cashier, loan officer, accountant, and manager. Again, this depends on the organization's needs. Five to seven access levels are typically appropriate.

Data security

Data security focuses on protecting data from accidental loss—through corruption of index files, deletion of files, reformatting of the computer, theft of the computer, fire, and even such calamities as coffee being spilled into the computer. Institutions cannot prevent all these events, but they can minimize data loss through frequent backup of data, safe storage of backed-up information, and menu options for recreating index files or repairing tables.

Many people wonder how often they should back up data. The classic answer is another question: How much data are you willing to reenter? A financial institution should perform daily backups. The daily backups do not all need to be stored. But at the end of the month a backup should be done that will be stored permanently. It is important to be rigorous about backups, and even to have the database program automatically perform backups at the end of the day. Ideally, there should be two sets of backups—one stored on-site, the other off-site. The off-site backup protects against loss of data due to computer theft, fire, or hard drive damage. It is also helpful to have manual record-keeping systems that can be used as an alternative to automated systems.

Programming languages

As the trend in operating systems moves from DOS and Windows 3.x to new versions of Windows, programming languages are evolving. The common database languages of the past (such as Dbase, FoxPro, and Clipper) are being replaced by new, "object-oriented" languages (such as C and Visual Basic), which produce software that is generally easier to maintain. Microfinance institutions beginning to develop a new system thus have the opportunity to take advantage of new technology and create a less costly, more easily maintained information system.

The new programming languages make it quicker and easier to develop better-quality software, allowing programmers to spend less time coding for the user interface (what the user sees on the screen) and more time writing code to process data into meaningful information. The result is improved programmer productivity and thus lower-cost and higher-quality software. The new languages also allow programmers to rely on multiuse routines rather than creating new code for every action, as was common in the past. As a result, code is more manageable, easier to document, and easier to maintain.

There are two apparent problems with today's programming environment. One is that many programmers are not disciplined enough to perform a thorough assessment of needs and instead often start right in on developing source code.

The other is that the demand for programmers has exceeded the supply of experienced programmers. Thus many marginal programmers are entering the market, and the quality of programming has declined. It is important to work with programmers who not only are excellent coders, but also understand financial applications.

Planning for the future

In general, in decisions relating to hardware purchases, the hiring of programmers, operating systems, network configurations, and programming languages, microfinance institutions should think about the future. What will the organization be doing five years from now? How can it use today's technology, and how relevant will that technology be in the future? Many microfinance institutions have an opportunity to create new systems that will provide support far into the future. To create the most reliable, cost-effective systems, it is important that they seek advice from computer consultants and other microfinance institutions developing accounting and finance software.

Notes

1. This is a relational database: data are stored in separate tables that are related through key fields. Each table contains information specific to a file, such as the client file or the loan file. The database locates related information in separate tables by relying on the database structure and the key fields.

2. Memory and hard disk space are frequently confused. Hard disk space is for long-term storage of information; it is where information is stored when the computer is off. Memory is for short-term storage of information; it is what the software needs in order to perform tasks when the computer is on. Both are usually referred to in terms of megabytes, or millions of pieces of information, contributing to the confusion. Memory is generally in the range of 8–32 megabytes, while disk space is generally more than 100 megabytes and may even be in the range of a gigabyte (1,000 megabytes).

3. Clients would be able to make loan repayments at any branch, although precise payment and balance information might not be available. They could also make savings deposits at any branch. But withdrawals would require a phone call to the client's home branch for authorization, to avoid the possibility of clients withdrawing the savings multiple times on the same day from different branch offices.

4. Windows 3.x refers to version 3 (including 3.0, 3.1, 3.11, and Windows for Workgroups).

ANNEX 2

The Chart of Accounts

This annex describes the accounts in the sample chart of accounts presented in chapter 2, providing more detail on those specific to microfinance activities.[1] It also presents a sample French-language chart developed by the BCEAO (Banque centrale des États d'Afrique de l'Ouest) for microfinance institutions. Understanding the key accounts is important in order to accurately calculate the indicators proposed in chapter 4.

Asset accounts

Assets are what is owned by or owed to the organization—items in which the organization has invested its funds for the purpose of generating future receipts. On the balance sheet, assets are always equal to the sum of liabilities plus equity.

Assets fall into two categories: current and long term.

- *Current assets* include cash and marketable securities, accounts receivable, loans receivable, and inventories that in the normal course of business will be turned into cash within 12 months.
- *Long-term assets* are those not readily redeemable in cash. Examples are land, buildings, machinery, equipment, furniture, and automobiles—all considered fixed assets—and investments or receivables held for more than one year. The loan principal outstanding not due within 12 months would be considered a long-term asset.

1000 Cash and equivalents

All balances available to the organization on a demand basis, such as cash, checking accounts, and funds deposited in on-demand accounts bearing little or no interest.

1050 Reserves in central bank—reserves on deposit with the central bank against liabilities such as client savings; required only of regulated financial institutions.

1100 Short-term investments—funds on deposit with a financial institution, with a term of less than one year, that are earning interest income for the organization.

1200 Loan portfolio

1210 Portfolio—the total loan principal outstanding (that is, owed to the institution by its borrowers) at a point in time.

Note: Past-due, nonperforming loans—the total loans outstanding that have an amount past due, a calculation that appears on the balance sheet. In most accounting systems it is not feasible to establish a separate account for past-due loans, transferring loan accounts in and out of the account as installments fall overdue or are paid. But portfolio systems should be capable of generating a subtotal of nonperforming loans for the balance sheet. Nonperforming loans are not moved to a separate account because of the difficulty of making this adjustment in systems that do not automate it.

1240 Restructured loans—outstanding loans for which the original terms have been renegotiated. Restructured loans can be either refinanced or rescheduled. Refinancing a loan involves developing a new loan agreement before a previous one is fulfilled—an agreement that increases the principal, extends the term, or introduces other changes in the terms of the loan. Rescheduling involves changing the payment period, the size of payments, or both, on an outstanding loan. A loan is usually restructured so that the borrower is no longer in arrears and is more likely to make payments on time. Restructuring is strongly discouraged because it makes risky loans appear healthy. For that reason restructured loans should be tracked separately from the rest of the portfolio.

1300 Reserves for possible losses

1310 Loan loss reserve—the amount set aside to cover future losses of the loan portfolio. When the reserve is created (or adjusted), a loan loss expense (referred to as the loan loss provision) is recorded on the income statement as an expense (see account 5110). The amount of loan loss expensed is then recorded on the balance sheet as a negative asset in this account, reducing the net outstanding loan balance. Actual loan losses, or write-offs, are reflected only on the balance sheet (not on the income statement), where they reduce the loan loss revenue and the corresponding outstanding loan portfolio balance (for example, account 1210). The net effect is to leave the net portfolio on the balance sheet unchanged, since the reserve has already been provided for (and expensed), except when the amount written off exceeds the reserve.

Note: Net loans outstanding—the sum of all loan balances owed to the organization, that is, all loans disbursed and not yet repaid or written off, net of any loan loss reserve (a calculation appearing on the balance sheet). The figure for loans outstanding reflects only the principal due, not interest accrued or expected.

1320 Interest loss reserve—the amount set aside to cover overdue accrued interest receivable that has already been considered income to the institution in an accrual-based system. This account functions conceptually the same as the loan loss reserve. It is not used in cash-based systems.

1400 Interest and fees receivable
In accrual-based systems interest and fees enter as income when they are earned, not, as in a cash-based system, when the client pays them (see section 2.2).

1600 Long-term investments
Investments not intended to be a ready source of cash, such as stocks, bonds, and promissory notes that will be held for more than one year.

1700 Property and equipment
Accounts ending in 0 (for example, 1710): cost—property and equipment (fixed assets) recorded at their acquisition cost.

Accounts ending in 1 (for example, 1711): accumulated depreciation—the sum of depreciation expenses recorded in the current and previous fiscal periods (see account 5630 below).

Note: Net property and equipment—the cost or recorded value of property and equipment less accumulated depreciation (a line item in the balance sheet).

Liabilities

Liabilities are what the organization owes to others in the form of cash commitments or as obligations to provide goods and services in the future.

2100 Interest payable
These accounts are required only in accrual systems. Nevertheless, even in cash systems it is advisable to accrue interest expense for large, infrequently paid liabilities, such as long-term loans from development banks that require only annual interest payments. Such treatment is necessary to accurately project expenses.

2200 Client deposits
Voluntary and compulsory client savings deposited in the organization that must be returned to the depositor, typically on demand.

2300 Loans payable, short term
The outstanding amount that the organization owes to banks or other lenders that is due to be repaid within one year.

2400 Loans payable, long term
The outstanding amount that the organization owes to banks or other lenders for which it is paying interest and that is due to be repaid in more than one year.

2600 Deferred revenue, program
Revenue received but not fully recorded in the current year. For example, if fees

are received up front for a two-year loan, half the amount might be recorded in the current year, and the other half deferred.

2700 Deferred revenue, grants
Funds received but restricted for use in future years. These are classified as a liability on the balance sheet because they would have to be returned to the funding organizations if the specified programs were not carried out. The funds are not recorded as revenues until the service or product is delivered. When the organization receives restricted or deferred funds, it incurs an obligation (liability) to provide the services described in the grant agreement. As the organization provides the services, it incurs expenses. Deferred revenue is then reflected as grant revenue and used to cover those expenses.

Equity accounts

Equity is equal to the organization's assets less its liabilities. It is sometimes referred to as net worth or net assets. Equity represents the value of the organization. It might include capital contributions of investors or donors and retained earnings. If a microfinance institution is incorporated, it will have shareholders' capital and the following accounts:

3010 Paid-in capital
The equity contribution of owners of stock in the institution.

3030 Donated capital, current year
The total cash donations that have been received by the institution and have been capitalized.

3100 Gain/(loss) from currency adjustments
Adjustments for gains and losses resulting from currency conversions.

3200 Retained earnings, current year
The amount of income (or loss) generated in the current year.

If the microfinance institution is an NGO, it will have fund balances rather than capital:

3010 Unrestricted fund balance
Donor funds not restricted to a particular use.

3020 Fund balance, credit program
Funds restricted for use in credit programs.

3030 Fund balance, noncredit program

Funds restricted for use in noncredit programs.

3200 Surplus/(deficit)

The amount of income (or loss) accumulated since the organization's formation.

Income accounts

4000 Interest income

The amount collected from clients for borrowing money over a specified period. In a cash-based system this would be the interest income received from the client during the period. In an accrual system it would be the interest owed by the client for use of the loan during that period, regardless of the interest actually paid in that period.

4100 Other loan income

Lending services revenue from other sources, such as commissions, fees, and penalties.

4200 Fee income (noncredit)

Tracked separately from financial services income.

4400 Income from grants

Tracked separately from earned income.

Expense accounts

5010 Interest on loans

Interest paid to banks and other financial institutions for money loaned to the organization.

5020 Interest on client savings

Interest payments earned by clients who deposit savings in the organization.

5110 Loan loss provisions

The allowance made for expected defaults on the loan fund, based on the historical default rate and present circumstances. The loan loss provision increases the loan loss reserve, the balance sheet account that offsets the gross portfolio outstanding. Although a loan loss provision (a noncash expense) is treated as a direct expense of the credit program when the provision is made, the loans will not yet have been written off as loan losses.

5120 Interest loss provisions
In accrual systems this provision works like account 5110, adjusting the interest receivable for expected losses.

Note: Operating expenses—The income statement format groups operating expenses together. Operating expenses are expenses related to the management of the loan portfolio, whether it is held as outstanding loans or investments and deposits. For a single-purpose financial institution virtually all costs should be included.[2] For multipurpose institutions all direct costs of financial operations and an appropriate share of overhead should be included.

5630 Equipment depreciation
An annual, noncash expense determined by estimating the useful life of each asset. Under the most common method, straight-line depreciation, an asset with an estimated useful life of five years would have a fifth of its original book value reflected as an expense in each of five years. Depreciation represents a decrease in the value of property and equipment to account for the portion of their useful life used up during each accounting period. Land theoretically does not lose value over time and therefore is not depreciated.

5700 Program expenses
Expenses related to programs offered by a multiservice institution that are distinct from the financial services it offers.

Notes

1. The definitions of accounts are closely based on SEEP Network, *Financial Ratio Analysis of Micro-Finance Institutions* (New York: PACT Publications, 1995).
2. Possible exceptions would be consultants or evaluations paid for by the microfinance institution but undertaken because of donor requirements. Such expenses would be considered nonoperating expenses.

TABLE A2.1

Chart of accounts based on the one developed by the BCEAO (Banque centrale des États d'Afrique de l'Ouest) for microfinance institutions

Classe 1

Opérations avec les institutions financières

10. Encaisses et comptes ordinaires
    101 Caisse
    102 Organe financier/caisse centrale
    103 Banque compte à vue
    104 Autres comptes a disponibilités
    105 Chèques et effets à l'encaissement
11. Comptes de dépôts à terme
    111 Organe financier/caisse centrale
    112 Banque
12. Comptes courants
    121 Organe financier/caisse centrale
    122 Banque
13. Emprunts à terme
    131 Organe financier/caisse centrale
    132 Banque ou autre
    138 Intérêts courus sur emprunts

Classe 2

Opérations avec les membres

20. Crédits sains
    201 Court terme
    202 Moyen terme
    203 Long terme
    208 Créances rattachées
21. Créances en souffrance
22. Dépôts des membres
    221 Dépôt à vue
    222 Dépôt à terme
    228 Dettes rattachées
29. Provision pour dépréciation des crédits en souffrance

Classe 3

Opérations diverses

30. Stocks
31. Titres de placement
32. Avances au personnel
33. Débiteurs divers
34. Comptes de régularisation actif
35. Créditeurs divers
36. Comptes de régularisation passif
39. Provision pour dépréciation des comptes de la classe 3
    390 Provision pour dépréciation des stocks
    391 Provision pour dépréciation des titres
    393 Provision pour dépréciation des créditeurs divers

(Table continues on the following page.)

TABLE A2.1 (continued)

Chart of accounts based on the one developed by the BCEAO (Banque centrale des États d'Afrique de l'Ouest) for microfinance institutions

Classe 4
Immobilisations
40. Immobilisations incorporelles
    401 Frais immobilisés
    402 Valeurs immobilisées
41. Immobilisations corporelles
    411 Terrains et aménagements de terrains
    412 Constructions
    413 Autres immobilisations corporelles
42. Immobilisations en cours
43. Dépôts et cautionnement
44. Immobilisations financières
    441 Titres immobilisés
48. Amortissement des immobilisations
    480 Amortissement des immobilisations incorporelles
    481 Amortissement des immobilisations corporelles
49. Provision pour dépréciation des terrains
    4911 Provision pour dépréciation des terrains
    4932 Provision pour dépréciation des titres immobilisés

Classe 5
Provisions, fonds propres et assimilés
50. Subvention d'équipement
51. Provisions pour pertes et charges
52. Report à nouveau
53. Réserves facultatives
54. Réserve générale
56. Résultat de l'exercice

Classe 6
60. Charges financières
    601 Charges d'intérêts
        6011 Intérêts sur dépôts à vue
        6012 Intérêts sur dépôts a terme
        6013 Intérêts sur refinancement
        6014 Intérêts sur emprunts à terme
    602 Autres charges financières
        6021 Commissions
        6022 Charges nettes/cession de valeurs mobilisées de placement
61. Achats et services exterieurs
    611 Achats
        6111 Variations de stock
    612 Eau et électricité
    613 Location
    614 Entretiens et réparation
    615 Primes d'assurance

TABLE A2.1 (continued)

Chart of accounts based on the one developed by the BCEAO (Banque centrale des États d'Afrique de l'Ouest) for microfinance institutions

62. Autres services extérieurs
    - 621 Publicité et relations publiques
    - 622 Transports et déplacements
    - 623 Frais postaux et de télécommunications
    - 624 Services bancaires
    - 625 Frais de formation et d'éducation d'études et de recherche
    - 626 Divers
63. Impôts et taxes
64. Charges de personnel
    - 641 Frais de personnel
    - 642 Charges sociales
65. Autres charges
    - 651 Remboursements de frais
    - 652 Pertes sur créances irrécouvrables
    - 653 Charges diverses
66. Dotations aux amortissements et aux provisions
    - 661 Dotations aux amortissements
    - 662 Dotations aux provisions
67. Charges exceptionnelles
    - 671 Valeur comptable des éléments d'actifs cédés
    - 672 Autres charges exceptionnelles

Classe 7

70. Produits financiers
    - 701 Produits d'intérêts
        - 7011 Intérêts sur crédits à court terme
        - 7012 Intérêts sur crédits à moyen et long termes
        - 7013 Intérêts sur dépôts à terme
    - 702 Autres produits financiers
        - 7021 Commissions
        - 7022 Produit des participants
        - 7023 Produits des valeurs mobilières de placement
        - 7024 Produit net cession des valeurs mobilières de placement
71. Autres produits
    - 711 Variations des stocks
    - 712 Production immobilisée
    - 713 Produits divers
    - 714 Subventions d'exploitation
76. Reprise sur amortissements et provisions
    - 761 Reprise sur amortissements
    - 762 Reprise sur provisions
77. Produits exceptionnels
    - 771 Produit de cession des éléments d'actif
    - 772 Quote-part des subventions virées au compte de résultat
    - 773 Autres produits exceptionnels

ANNEX 3

Publications on Financial Indicators and Financial Management

In recent years a number of good publications have begun to fill the long-standing void in specialized financial management for microfinance institutions. This annex describes those most useful for microfinance institutions that are selecting or developing a management information system and identifying the most important indicators to follow.

SEEP Network, *Financial Ratio Analysis of Micro-Finance Institutions,* 1995. 40 pages. Available through PACT Publications, 777 United Nations Plaza, New York, NY 10017, fax: 212-696-9748, email: books@pactpub.org.

The first part of this succinct document describes the basic reports that should be generated by any accounting system: balance sheet, income statement, and portfolio report. It also gives helpful definitions for all terms in these reports. The second part presents a framework of 16 key financial ratios, grouped in three sections—financial sustainability ratios, operating efficiency ratios, and portfolio quality ratios. It provides detailed formulas for all the ratios, most of which are extracted from information in the financial reports in the first part, and gives brief explanations on their interpretation.

Robert Peck Christen, *Banking Services for the Poor: Managing for Financial Success—An Expanded and Revised Guidebook for Microfinance Institutions,* 1997. 278 pages. Available through ACCION Publications, 731 15th Street, N.W., Washington, D.C. 20005, fax: 202-393-5115.

This detailed manual brings the sophisticated financial management techniques of the formal banking industry within reach of the microfinance community, covering in detail information not presented in any other publication specific to microfinance. The manual is essential for any microfinance institution expecting to diversify its funding away from straightforward donations. Chapter 1 outlines important challenges facing the industry—loan repayment, cost recovery, accessing commercial funding, and attracting private equity investment. Chapter 2 presents practical accounting techniques for adjusting for inflation and subsidies and for establishing appropriate loan loss reserves. Chapter 3 gives detailed advice on establishing appropriate interest rates, taking into consideration capital structure and the need for prudent levels of capital adequacy and leverage. Chapter 4 describes asset and liability management techniques, such as net interest margin, gap analysis, and liquidity management, that have rarely been applied in microfinance institutions. Chapter 5 addresses institutional productivity, identifying key administrative features of efficient organizations and providing guidance on product costing in an institution offering multiple financial products. Finally, chapter 6 outlines an approach to business planning and financial projection modeling that departs from the project-oriented approach common in the industry.

David Ferrand, *Financial Analysis of Micro-Finance Institutions: An Introductory Guide*, 1997. 101 pages plus an Excel spreadsheet on diskette. Available through Intermediate Technology Publications, 103/105 Southampton Row, London WC1B 4HH, United Kingdom, fax: +44 0171-436-2013, email: itpubs@itpubs.org.uk.

This document is a good resource for managers selecting the set of indicators that their institution will use. It presents a well-researched, exhaustive list of 86 possible ratios for use by microfinance institutions. The document first provides a solid introduction on the uses and limitations of financial ratio analysis. It then presents a series of ratios on financial profitability, liquidity, capital adequacy, portfolio quality, operating efficiency, outreach (provision of services to the poor), branch-level efficiency, and loan officer productivity. The document goes beyond commonly used ratios to look for means of determining internal institutional productivity and achievement of the institution's mission. All the indicators are incorporated in a comprehensive strategic and operational framework. Although the document does not use hypothetical data to show a practical application of the ratios, it does provide a spreadsheet that automatically calculates the ratios once basic financial data have been input.

Margaret Bartel and others, *Fundamentals of Accounting for Microcredit Programs*, GEMINI, 1994. 46 pages. Available through PACT Publications, 777 United Nations Plaza, New York, NY 10017, fax: 212-696-9748, email: books@pactpub.org.

This introductory manual describes fundamental accounting concepts and principles, providing guidance on the establishment of a chart of accounts and financial statement formats for an NGO providing credit services. It covers material that will be familiar to anyone who has basic accounting training, but serves as a useful overview for those who do not. The manual is intended to complement the following two manuals on financial ratios.

Margaret Bartel and others, *Financial Management Ratios I: Analyzing Profitability in Microcredit Programs,* and *Financial Management Ratios II: Analyzing for Quality and Soundness in Microcredit Programs,* GEMINI, 1994. 42 pages and 48 pages. Available through PACT Publications, 777 United Nations Plaza, New York, NY 10017, fax: 212-696-9748, email: books@pactpub.org.

The first of these two manuals briefly describes the importance of financial ratio analysis and then presents 11 primary ratios for assessing yield, cost efficiencies, and financial self-sufficiency. The second manual presents 11 ratios covering credit risk, interest rate risk, liquidity risk, leverage, capital adequacy, marginal costs, and break-even. Both manuals provide problem sets for practicing the calculations. To ensure practical understanding, they apply hypothetical data to all the formulas. But they give limited guidance on the interpretation of the ratios.

Joanna Ledgerwood and Kerri Moloney, *Accounting: Facilitator's Guide* and *Finance: Study Guide*, Calmeadow, 1996. 153 pages and 130 pages. Available through PACT Publications, 777 United Nations Plaza, New York, NY 10017, fax: 212-696-9748, email: books@pactpub.org.

This pair of guides covers much of the same material as the Bartel manuals, but in a much more extensive and comprehensive fashion. In addition, they incorporate most of the material from the SEEP Network's *Financial Ratio Analysis of Micro-Finance Institutions.* The manuals are written from a practical perspective and include extensive problem sets with solutions. The set is designed to provide a training curriculum for accounting and financial management but would work as well for independent study.

Martin Holtmann and Rochus Mommartz, *Technical Guide for Analyzing the Efficiency of Credit-Granting NGOs*, Development and Finance, 1996. 146 pages. Available through IPC Consulting, Am Eisernen Schlag 31, D-60431, Frankfurt am Main, Germany, fax: 49-69-951 437-25, email: ipc_gmbh@compuserve.com.

Inter-American Development Bank, *Technical Guide for the Analysis of Microenterprise Finance Institutions,* June 1994. 64 pages. Available in both English and Spanish from the Microenterprise Unit of the Inter-American Development Bank, tel.: 202-623-2509, fax: 202-623-1463.

These two guides are quite similar, though the IADB document is more concise and practical. Both guides are oriented toward external evaluators of microfinance institutions and emphasize the reworking and adjustment of financial statements to get a more accurate analysis of an institution's financial position than would be possible through a simple review of its information. The guides provide valuable theoretical background for many of the indicators and techniques used in this handbook.

ANNEX 4

International MIS Software Packages

This annex contains information on a small number of software systems that have been successfully installed in more than one country, demonstrating their developers' intent to move into the international arena.[1] Many local software packages are available to microfinance institutions, but these systems will have to be identified by research in the local environment—through inquiries to other institutions and to software companies, donors, and consultants. Systems in use in other microfinance institutions and in commercial banks may be available for purchase and customization at a significantly lower purchase price and with better support than the internationally available systems listed here.

The intent of this annex is to provide a basic overview of internationally available software packages, based on information provided by the software companies. Any assessments of their quality or their compatibility with needs will have to be done by each microfinance institution (see chapter 5).

The FAO MicroBanking System

Owner
Food and Agriculture Organization of the United Nations (FAO)

Languages
- English
- French
- Spanish

Individually developed versions of the software are running in Russian and in Thai languages. The system can be easily translated into other languages.

Current installations
As of March 1997, in use in more than 900 offices of financial intermediaries ranging from credit unions to specialized agricultural credit institutions to large cooperatives to commercial banks. Used in main offices as well as in branches.

Countries where installed
More than 20 countries in Asia, Africa, Latin America and the Caribbean, Eastern Europe, and the former Soviet Union.

Main aspects and features

- Low-cost software designed for automation of banking operations of small and medium-size financial intermediaries and to run on basic PC equipment
- Can serve a single-teller, stand-alone installation as well as a multiteller installation
- Front office system (data are entered at the time of the transaction)
- The Standard RunTime Edition (SRTE) 2.0 version of the system covers loans, savings accounts, time deposits, current accounts, customer information, and general ledger in one integrated package. It also supports internal checks and a series of management reports.
- The Extended Version (EXTE) of the system allows introduction of major modifications and customization through access to parts of the source code. Institutions with procedures that differ substantially from standard systems may need to acquire this version of the software.

Main strengths and limitations

- The FAO MicroBanking System has been developed over nearly 10 years. Because new features have been added gradually, major operational problems have been avoided.
- In addition to being a relatively safe and problem-free product, the system is sold at an affordable price.
- The software package is user-friendly: it is easy to configure to an institution's needs, to install on the PC, to use in capturing existing manual data, and to operate.
- In all activities related to the software, FAO emphasizes developing human resources to ensure adequate local support. The limiting factor for dissemination of the system in new areas continues to be the availability of qualified support service.

Technical support

- There are some 31 people worldwide with experience at various levels in supporting the system's installation and customization. The purchase of the software includes support from an authorized provider by phone, fax, or email for three months. FAO recommends that an authorized support provider also be contracted to help with installation and customization and that a contract for longer-term assistance be established with a support provider when the warranty period has expired.
- SRTE 2.0 and EXTE training courses are organized by the authorized support service providers. Information about venues and prices can be obtained directly from the organizer or through FAO.

Price range

- The current price of the SRTE 2.0 is $800 for each installation. The access fee for the EXTE version is $8,000 for first-time buyers. Institutions that have an earlier version of the EXTE and wish to upgrade will pay 50 percent of the current access fee ($4,000). In addition to the access fee, site license fees are charged for each installation ($400 per site for the first 10 sites, $250 per site for 11–100 sites, and $200 per site for more than 100 sites). An unlimited number of users may access the software at each site.

- The price for support services needed beyond the three-month warranty is agreed on between the user and the support service provider.

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Grameen Accounts

Owner

Grameen Trust, Computer Services Unit

Languages

- English

Current installations

Grameen Bank, 152 branch and zone offices

Countries where installed

- Bangladesh
- Nepal

Main aspects and features

This software provides an accounting solution for Grameen Bank branch and zone offices. Users enter daily vouchers, and the software provides a daily transaction statement, clean cash, cash and bank book, trial balance, general ledger, income and expenditure, balance sheet, budget variance, and so on. Options are available for occasional entry (such as new accounts head, adjustment entries, new departments, and project codes). The software includes different levels of security access.

Main strengths and limitations

The software has been successfully operated at the field level for the past three years in parallel with the Grameen Banker software and in some of the bank's zone offices. It has been modified several times, and a new version will soon be launched.

Technical support

Intensive training programs are organized for branch operators; international training programs are also organized.

Price range

$300 per copy

Contact

Computer Services Unit
Grameen Trust
Grameen Bank Bhaban
Mirpur-2, Dhaka-1216, Bangladesh
Tel.: 9005350 or 9005257-68 (ext. 1243 or 1214)
Fax: 806319
Email: g_csu@grameen.com

Grameen Banker

Owner

Grameen Trust, Computer Services Unit

Languages

- English

Current installations

Grameen Bank, 138 branch offices

Countries where installed

- Bangladesh
- Nepal

Main aspects and features

This DOS- and Windows-based software is a microcredit loan monitoring system. It monitors information on each borrower, and includes daily installment collection, monthly collection sheet production, monthly process, and year-end closing activities. The software supports four types of interest rate calculation: actual balance method, fixed interest, flat rate interest, and interest after loan payment. The system can also handle savings, including personal group savings and center savings, and supports group-based lending methodologies. The software includes different levels of security access.

Main strengths and limitations

The software has been successfully operated at the field level for the past three years. It has been modified several times, and a new version will soon be launched.

Technical support
Intensive training programs are organized for branch operators; international training programs are also organized.

Price range
$300 per copy

Contact
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IPC Banking System

Owner
IPC GmbH

Languages
- Albanian
- English
- French
- Portuguese
- Russian
- Spanish

Translation into other languages is possible. Use of several languages in parallel is feasible.

Current installations
Installed in 11 institutions with a total of 38 branch offices; in addition, in about 50 installations the software serves as a credit monitoring system.

Countries where installed
- Albania
- Bolivia
- Brazil
- Colombia
- Costa Rica
- El Salvador
- Paraguay

- Russia
- Uganda
- Ukraine

Main aspects and features

- Runs on stand-alone PC and under Novell or Windows NT
- Modules: loan monitoring, savings, fixed deposit, accounting
- Extensive support of entire lending process, starting with registration of application, loan application analysis, integrated generation of loan agreement and payment plan, wide range of possible payment plans, various interest calculation procedures (simple, compound, 365- or 360-day basis, various rounding mechanisms), close arrears monitoring (automatic daily report) with variable charging system, basic support for group lending
- Savings system with interest calculation options permitting user definition of parameters, variable interest rate tables, fee, and signature module
- Supports full range of teller-based operations, including monitoring of cash and check payments, monitoring of cashiers, and money-changing function
- Accounting system with interface to other modules
- Complete MIS covering all information needs with a wide range of reports whose value has been demonstrated in numerous applications

Main strengths and limitations

- Product of 10 years' experience in microlending
- Can be rapidly modified to meet country- or institution-specific requirements
- Based on broad experience with various legal, tax, and address systems

Technical support

- Site visits by IPC personnel for installation, configuration, and training possible
- Maintenance contract available that provides for modifications and updates

Price range

- Price dependent on type of contract, extent of modifications required, and number of installations
- System usually installed in the framework of a project; minimum contract amount of $50,000 for systems not implemented in conjunction with projects

Contact

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Micro Finance 2000 and Credit Union 2000

(sister applications for microfinance institutions and credit unions)

Owner

DBS Consult (Pty.) Ltd.

Languages

- Bahasa Indonesia
- English
- French

Current installations

Seventy

Countries where installed

- Benin
- Cameroon
- Ghana
- Indonesia
- Malawi
- South Africa
- Togo

Main aspects and features

- Easy-to-use basic savings and loan application with integrated general ledger
- Five levels of password security
- Transactions posted to client and general ledgers in real time to avoid data losses during power outages
- Rich client information, with extra user-definable fields
- Unlimited number of user-defined savings and loan products
- Interest calculations on declining balance or flat rate
- Group lending
- User-named and -defined fees
- Payroll integration for microfinance institutions and credit unions
- Wide variety of reports, including standard financial statements, delinquency reports, and client balance listings. Also includes a Windows-based financial reports package, including balance sheet, income and expenses statement with margin analysis, statistics on membership, liquidity report, and delinquency report
- Reports 38 performance ratios
- Maintains a complete audit trail through automatic production of daily, weekly, month-end, quarter-end, and year-end reports
- Allows export of data to Excel, Quattro Pro, and Lotus

Main strengths and limitations

- Runs on any hardware from 286 processor up, under DOS, Windows 3.1, or Windows 95
- Upgrade path to more advanced software offered by DBS
- Uses standard-width printers
- Combines ease of use with user definition of wide range of parameters and products

Technical support

- Remote support by telephone, fax, and email included in license fee
- DBS forms local business partnerships, preferably with the users' own networks, for local support in local languages.

Price range

$700 per user per year, sold in three-year blocks ($2,100), including remote support and upgrades

Contact

DBS Consult
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Web page: www.dbs.co.za

The Reliance Credit Union Management System

Owner

CUSA Technologies, Inc. (CTI)

Languages

- English
- Spanish

A French version will be the next release.

Current installations

More than 100 locations in the United States

Countries where installed

Currently being installed in Puerto Rico, Central America, and Australia (26 credit unions with more than 150 branches)

Main aspects and features

- On-line teller transactions

- Loan processing
    - Step-by-step loan setup
    - Collateral tracking
    - Insurance tracking
    - Co-maker support
    - Pledging
    - Multiple disbursements
    - Laser document printing
    - Group-based lending
    - Unlimited loan types
    - Repayment in daily through annual increments
- Mortgage lending
    - Mortgage origination
    - 360- and 365-day options
    - Escrow accounts
    - On-line loan application
    - Delinquency tracking
    - Tracking of loan write-offs
    - Variable interest rate loans
    - Student loan system
    - Credit bureau reporting
    - Credit bureau inquiry
- Integrated general ledger
    - Asset tracking and depreciation
    - Posting to prior or current period
    - Automated vendor and payee checks
    - Vendor payments, checks lookup
    - Full branch accounting
    - Investment tracking
    - Bank reconciliation
    - Downloadable to a PC
    - Unlimited savings accounts per member
    - Certificate management
    - Club accounts
    - Job queuing system
    - Safe deposit box control
    - Laser forms printing
- Special-purpose modules
    - Audio response
    - ACH transaction processing
    - Automatic teller machine (ATM) transaction processing, network or on-line
    - Asset and liability management
    - Credit card processing
    - Custom report writer

- Electronic payroll processing
- Government reporting
- Laser statement processing
- Laser-printed checks
- Optical disk records management
- Share draft processing
- Shared branching, service center
- Touch screen
- Signature and picture verification

Main strengths and limitations

The system is written in a fourth-generation language (Progress) that has its own translation management system, allowing the system to be more easily "localized" for different regions.

Technical support

Twelve-hour, Monday–Saturday phone and Internet support in English from the United States. CTI is currently establishing a Spanish-language support center (a distributor) in Puerto Rico.

Price range

Pricing is by module, by asset size, and by number of system users. Special pricing arrangements can be tailored to circumstances. The system is written for large institutions but can be sized for PCs at lower prices.

Contact

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Vice President for International Business Development
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SiBanque

Owner

Centre International de Credit Mutuel (CICM)

Languages

- English
- French

The system may be translated into other languages.

Current installations

About 100 offices in eight institutions

Countries where installed

- Burundi
- Cameroon
- Congo, Rep. of
- Guinea
- Mali
- Senegal

Main aspects and features

- Set up for front office and back office transactions
- Offers complete management of a credit union
- Parameter-driven configuration
- Transparent operation for users

Technical support

A maintenance hot line contract is available.

Price range

The software does not have a cost, but staff training is required before installation, the cost of which is billed to the client. In addition, there is a fee for the maintenance contract.

Contact

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Small Loans Manager

Owner

Global Software Support Ltd.

Languages

- English
- Spanish (under development)

Current installations

Thirteen institutions

Countries where installed

- Belize
- Egypt
- Guyana
- Southern Africa region

Main aspects and features

Small Loans Manager (SLM) is a DOS-based package for loan management only. It does not currently have a savings module or a linked accounting module. It incorporates:

- A client name and address database
- A client contact management database
- Loan approval and posting, and computation of loan schedules and interest earned using declining balance, annual declining balance, and straight-line interest methods
- Grace period interest
- Periods in months or weeks
- Interest calculated daily or by period
- Interest penalties
- Disbursement analysis by geographical region and business sector
- Social impact analysis (income and employment generated)

Main strengths and limitations

- Breadth and flexibility in methods of loan schedule calculation
- Comprehensive reporting procedures, with reports including all the standard loan performance and quality measures: repayment rates, arrears rates, write-off rates, exposed portfolio measures, comprehensive analysis of loan disbursement using cross-tabulations and graphs, portfolio cash reporting and forecasting
- A demonstration disk can be ordered that includes all the features of the SLM.

Technical support

The SLM is usually offered as part of a package including 5–15 days of consultancy, depending on requirements for installation, training, transfer of existing systems, and modifications. A maintenance agreement is usually signed to ensure ongoing support from the United Kingdom for an annual fee.

Price range

The SLM software costs £500. Consultancy is offered and recommended at a price of £300 per day plus transportation and expenses. A typical package including the software and five days' training and consultancy costs about £3,000.

Contact

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Solace for Workgroups

Owner

Solace Technologies Pty. Ltd.

Languages

English

System supports translation management facilities whereby two languages may be resident at the same time (including double-byte characters). Translation of user interface to local language is included in country customization.

Current installations

Thirteen

Countries where installed

- Australia
- New Zealand
- South Africa
- Zimbabwe

Main aspects and features

- Customer- or member-centric; all client activities and relationships available from one screen with minimal navigation
- Customers defined as individuals, trusts, corporations, and groups
- Graphic user interface available by first quarter of 1998; currently character-based with point-and-click support for menus and the normal Windows connectivity properties

- Windows 95, Windows NT, UNIX, AS400
- Multisite, multiuser capability
- Savings accounts: unlimited number, user-definable products
- Loan accounts: unlimited number, user-definable products, including group loans
- Current (checking) accounts
- Equity (indefinite and subscription) accounts
- Passbook and receipt printing
- Branch administration
- Flexible, “do it yourself,” tiered interest plans and charges
- Cash positions and cash management
- Advanced lending origination, multiple facility loans and credit control
- Linked loan security facilities and multiple security collateral
- Extensive relationship management (customers, borrowers, guarantors, mortgagors, agents)
- Full on-line audit inquiries
- Full customer and account maintenance facilities
- Full-featured financials, including general ledger and cash book
- Teller services
- Central and on-line customer information
- Rich management, administrative, and operational reporting (more than 200 resident reports, plus user-defined reports)
- Optional integrated letter production
- Automatic check printing
- Flexible security access profiling
- Integrated message management
- User-definable fields for optional information
- Country customization available

Main strengths and limitations

- Robust, multifeatured package with upgrade path to full-function, multibranch banking with Solace RBS
- Highly scalable, from high-volume, large, multibranch networks of more than 200 users to a single user on a notebook PC
- Customer-centered, not account-centered (all information on a customer and on the customer’s accounts and loans available from a single screen)
- Multiple languages available
- Highly recoverable, auditable, and stable relational database management system
- Internet support, low support costs
- Not an off-the-shelf package; limited implementation included, with customized implementation and data conversion available at additional cost

Technical support

- DBS (worldwide by Internet)
- DBS is dedicated to facilitating appropriate local technical infrastructure wherever business volume warrants, usually through a joint venture with a local partner.

Price range

The price is based on a nominal Solace software purchase fee of $3,000 per user, plus run-time costs and an annual (asset- and user-based) support fee dependent on local requirements and conditions.

Contact

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Note

1. There are many more software packages marketed internationally than the few listed here. Those included came to light through several recent surveys and were described in response to a survey requesting the information here.